Service Guide

Scientific Atlanta

Prisma® and Prisma II™ Platform Maintenance and Troubleshooting

Bringing the Interactive Experience Home™

Please Read This Entire Guide

Important

Please read this entire guide before you install or operate this product. Give particular attention to all safety statements.

Service Guide

Scientific Atlanta

Prisma® and Prisma II™ Platform Maintenance and Troubleshooting

Bringing the Interactive Experience Home™

Notices

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Safety Precautions

Protect Yourself From Electric Shock and Your System From Damage!

- The products described in this document comply with international safety and design standards. Observe all safety procedures that appear throughout this guide, and the safety symbols that are affixed to the products.
- If circumstances impair the safe operation of the products, stop operation and secure products against further operation.

Safety Symbols

Avoid personal injury and product damage! Do not proceed beyond any symbol until you fully understand the indicated conditions.

You will find this symbol in this literature. This symbol indicates important operating or maintenance instructions.

You may find this symbol affixed to the products. This symbol indicates a live terminal; the flash points to the terminal device.

You may find this symbol affixed to the products. This symbol indicates a protective earth terminal.

You may find this symbol affixed to the products. This symbol indicates excessive or dangerous heat.

You may find this symbol affixed to the products. This symbol indicates an infrared laser that transmits intensity-modulated light and emits invisible laser radiation. This symbol can also indicate an LED that transmits intensity-modulated light.

Power

Important: These products are Class I products. You must properly ground these products.

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Safe Software Operation

The software described in this guide is used to monitor and/or control Scientific-Atlanta and other vendors' electrical and optical equipment designed to transmit cable TV signals. Certain safety precautions should be observed when operating equipment of this nature.

For product specific safety requirements, refer to the appropriate section of the documentation accompanying your product.

For safe operation of this software product, refer to the following warnings.

⚠ **WARNINGS:**

- **Ensure that all optical connections are complete or terminated before using the product to remotely control a laser device. An optical or laser device can pose a hazard to remotely located personnel when operated without their knowledge.**
- **Allow only personnel trained in laser safety to operate the software product. Otherwise, injuries to personnel may occur.**
- **Restrict access to the software product to authorized personnel only.**
- **Install the software product in a restricted access area.**

Enclosure

- Do not allow moisture to enter the products.
- Do not open the enclosure of the products unless otherwise specified.
- Do not push objects through openings in the enclosure of the products.

Cables

- Always pull on the plug or the connector to disconnect a cable. Never pull on the cable itself.
- Do not walk on or place stress on cables or plugs.

Fuse

- Always use a fuse that has the correct type and rating. The correct type and rating is indicated on the products.
- Always disconnect all power cables before you change a fuse.

Service

Refer service only to service personnel who are authorized by Scientific-Atlanta.

Laser Safety

Introduction

Each product described in this guide does one of the following:

- Contains an infrared laser that transmits intensity-modulated light and emits invisible radiation
- Connects to an infrared laser and can pass intensity-modulated light, which is considered to be invisible radiation

Warning: Radiation

> ⚠ **WARNING:**
>
> - **Avoid personal injury! Use of controls, adjustments, or procedures other than those specified herein may result in hazardous radiation exposure.**
> - **Avoid personal injury! The laser light source on this product emits invisible laser radiation. Avoid direct exposure to the laser light source.**

- Do not apply power to the products if the fiber is unmated or unterminated.
- Do not stare into an unmated fiber or at any mirror-like surface that could reflect light that is emitted from an unterminated fiber.
- Do not view an activated fiber with optical instruments.

Warning: Fiber Chips

> ⚠ **WARNING:**
>
> **Avoid personal injury! Wear safety glasses and use extreme caution when you handle the glass chips that are inside the cladding of the optical fiber. X-ray cannot detect these glass chips if they become embedded in the skin. Place the chips immediately in a small waste container and discard.**

Modifications

Do not make modifications to these products without the approval of Scientific-Atlanta.

Whenever modifications that may affect hazard levels are made to the optical fiber communication system, the person or organization that performs such modification must reassess hazard levels. They must do this by conducting tests and measurements wherever appropriate for the ensurance of compliance. If there is a change in the hazard level, they must re-label the product.

Preface

About This Guide

Introduction

This guide provides maintenance and troubleshooting information for the Prisma® and Prisma II™ platforms.

Who Should Read This Guide

This guide is intended for personnel who are responsible for operating and maintaining the platforms.

WARNING:

Only qualified personnel should perform the instructions provided in this guide. Otherwise, personal injury or equipment damage may result.

In This Guide

This guide is divided into the following chapters.

Related Publications

For further information about the products described in this guide, refer to the documentation that accompanied each product.

Document Version

This is the first release of this guide.

Chapter 1
Transmitters

Overview

Introduction

This chapter provides information to assist you in maintaining and troubleshooting Prisma® and Prisma II™ Transmitters.

Qualified Personnel

Only appropriately qualified and trained personnel should attempt to maintain or troubleshoot the transmitters described in this chapter.

> ⚠ **WARNING:**
>
> **Allow only qualified personnel to maintain or troubleshoot these transmitters. Otherwise, personal injury or equipment damage may occur.**

In This Chapter

This chapter contains the following topics.

Section A
Prisma Model 6473 Forward Transmitters

Overview

Introduction

The information in this section applies to the following Prisma Model 6473 Forward Transmitters:

- Model 6473-NC Overlay Transmitter
- Model 6473 870 MHz Family of Transmitters
- Model 6473-10 750 MHz Transmitter
- Model 6473-10 870 MHz Transmitter
- Model 6473-12 750 MHz Transmitter

In This Section

This section contains the following topics.

Monitor Alarm Parameters

Introduction

From the ALARMS screen on the transmitter, you can determine whether there is an alarm condition and, if there is an alarm condition, the cause of the alarm.

If an alarm condition:

- Is present, the cause of the condition displays on the screen. Items that are not in the alarm state are passed over and are not displayed.
- Is not present, the message **No Alarms** displays on the screen.

Alarm Information

The following transmitter alarm information is available:

- Software self test
- Laser power level
- Laser bias current
- Laser temperature
- RF input status
- Module temperature
- +5 V DC digital power level
- +5 V DC analog power level
- -5 V DC backplane power level
- +15 V DC control card power level
- +24 V DC power level
- Backplane power supply status (primary and secondary)
- Continuous wave (CW) mode

Notes:

- Not all alarm parameters listed above apply to all Model 6473 Forward Transmitters.
- When a critical condition is detected, laser output is disabled unless the condition is caused by high RF input or low bias current.

Continued on next page

ALARMS Screen Description

The ALARMS screens let you quickly determine the cause of an alarm. When an ALARMS screen is active, press the Select key on the transmitter to rotate through the active alarms.

Each screen also displays the current parameter. If no alarm is active for a particular parameter, the module does not display that screen.

The following table shows the values displayed on the ALARMS screen for out-of-range errors or a failure.

ALARMS Screen Value	Description
OK	Component is operational or passes test (for parameters without an operating range).
HIGH	The measured level is above the operating range.
LOW	The measured level is below the operating range.
FAIL	Component, test, or signal failure (for parameters without an operating range).

Continued on next page

Monitoring Alarm Parameters for Models 6473-NC Overlay and 750 MHz Forward Transmitters

The following table describes each alarm parameter for the Model 6473-NC Overlay and Model 6473 750 MHz Forward Transmitters.

Parameter	6473-NC Overlay Transmitter		6473-10 750 MHz Transmitter		6473-12 750 MHz Transmitter	
	Status	**Alarm Indicator**	**Status**	**Alarm Indicator**	**Status**	**Alarm Indicator**
Self Test (Software self test)	OK	Off	OK	Off	OK	Off
	FAILED	Illuminates	FAILED	Illuminates	FAILED	Illuminates
Power (Laser power level)	HIGH: More than 3.5 dBm	Blinks	HIGH: More than 10.5 dBm	Blinks	HIGH: More than 12.5 dBm	Blinks
	LOW: Less than 2.5 dBm	Illuminates	LOW: Less than 9.5 dBm	Illuminates	LOW: Less than 11.5 dBm	Illuminates
Bias (Laser bias current)	HIGH: More than 90 mA	Blinks	HIGH: More than 90 mA	Blinks	HIGH: More than 90 mA	Blinks
	LOW: Less than 20 mA	Illuminates	LOW: Less than 20 mA	Illuminates	LOW: Less than 20 mA	Illuminates
Ltemp (Laser temperature)	N/A	N/A	HIGH: More than 30.0°C	Illuminates	HIGH: More than 30.0°C	Illuminates
			LOW: Less than 20.0°C	Blinks	LOW: Less than 20.0°C	Blinks
RFlvl (RF level) RFLow (RF low level alarm)	HIGH	Illuminates	HIGH	Illuminates	HIGH	Illuminates
	LOW On/Off	Blinks	LOW On/Off	Blinks	LOW On/Off	Blinks
MTemp (Module temperature)	HIGH: Above 80.0°C	Blinks	HIGH: Above 80.0°C	Blinks	HIGH: Above 80.0°C	Blinks

Continued on next page

Parameter	6473-NC Overlay Transmitter		6473-10 750 MHz Transmitter		6473-12 750 MHz Transmitter	
	Status	**Alarm Indicator**	**Status**	**Alarm Indicator**	**Status**	**Alarm Indicator**
D5Vdc (+5 V DC digital power level)	HIGH: 5.25 V	Illuminates	HIGH: 5.25 V	Illuminates	HIGH: 5.25 V	Illuminates
	LOW: Below 4.75 V	Illuminates	LOW: Below 4.75 V	Illuminates	LOW: Below 4.75 V	Illuminates
A5Vdc (+5 V DC analog power level)	HIGH: Above 5.50 V	Illuminates	HIGH: Above 5.50 V	Illuminates	HIGH: Above 5.50 V	Illuminates
	LOW: Below 4.50 V	Illuminates	LOW: Below 4.50 V	Illuminates	LOW: Below 4.50 V	Illuminates
-5Vdc (-5 V DC power level)	HIGH: Above –4.50 V	Illuminates	HIGH: Above –5.50 V	Illuminates	HIGH: Above –5.50 V	Illuminates
	LOW: Below –5.50 V	Illuminates	LOW: Below –4.50 V	Illuminates	LOW: Below –4.50 V	Illuminates
15Vdc (+15 V DC control card power level)	HIGH: Above 16.5 V	Illuminates	HIGH: Above 16.5 V	Illuminates	HIGH: Above 16.5 V	Illuminates
	LOW: Below 13.50 V	Illuminates	LOW: Below 13.50 V	Illuminates	LOW: Below 13.50 V	Illuminates
24Vdc (+24 V DC backplane power level)	HIGH: Above 26.40 V	Illuminates	HIGH: Above 26.40 V	Illuminates	HIGH: Above 26.40 V	Illuminates
	LOW: Below 22.60 V	Illuminates	LOW: Below 22.60 V	Illuminates	LOW: Below 22.60 V	Illuminates
• PSPri • PSsec (Primary and secondary backplane power supply status)	OK	Off	OK	Off	OK	Off
	FAIL	Blinks	FAIL	Blinks	FAIL	Blinks
CW Mode (Continuous wave mode)	N/A	N/A	On	Blinks	On	Blinks
			Off	Off	Off	Off

Continued on next page

Monitoring Alarm Parameters for Model 6473 870 MHz Forward Transmitters

The following table describes each alarm parameter for the Model 6473 870 MHz Forward Transmitters.

Parameter	6473 870 MHz Transmitter		6473-10 870 MHz Transmitter	
	Status	**Alarm Indicator**	**Status**	**Alarm Indicator**
Self Test (Software Self Test)	OK	Off	OK	Off
	FAILED	Illuminates	FAILED	Illuminates
Power (Laser Power Level)	HIGH: More than 0.5 dBm above nominal	Blinks	HIGH: More than 10.5 dBm	Blinks
	LOW: More than 0.5 dBm below nominal	Illuminates	LOW: Less than 9.5 dBm	Illuminates
Bias (Laser Bias Current)	HIGH: More than 90 mA	Blinks	HIGH: More than 90 mA	Blinks
	LOW: Less than 20 mA	Illuminates	LOW: Less than 20 mA	Illuminates
Ltemp (Laser Temperature)	HIGH: More than 30°.0C	Illuminates	HIGH: More than 30°.0C	Illuminates
	LOW: Less than 20°.0C	Blinks	LOW: Less than 20°.0C	Blinks
RFlvl (RF Level)	HIGH	Illuminates	HIGH	Illuminates
RFLow (RF Low Level Alarm)	LOW On/Off	Blinks	LOW On/Off	Blinks
MTemp (Module Temperature)	HIGH: Above 80.0°C	Blinks	HIGH: Above 80.0°C	Blinks

Continued on next page

Parameter	6473 870 MHz Transmitter		6473-10 870 MHz Transmitter	
	Status	Alarm Indicator	Status	Alarm Indicator
D5Vdc (+5 V DC digital power level)	HIGH: 5.25 V	Illuminates	HIGH: 5.25 V	Illuminates
	LOW: Below 4.75 V	Illuminates	LOW: Below 4.75 V	Illuminates
A5Vdc (+5 V DC analog power level)	HIGH: Above 5.50 V	Illuminates	HIGH: Above 5.50 V	Illuminates
	LOW: Below 4.50 V	Illuminates	LOW: Below 4.50 V	Illuminates
-5Vdc (-5 V DC power level)	HIGH: Above –5.50 V	Illuminates	HIGH: Above –5.50 V	Illuminates
	LOW: Below –4.50 V	Illuminates	LOW: Below –4.50 V	Illuminates
+15Vdc (15 V DC control card power level)	HIGH: Above 16.5 V	Illuminates	HIGH: Above 16.5 V	Illuminates
	LOW: Below 13.50 V	Illuminates	LOW: Below 13.50 V	Illuminates
+24Vdc (24 V DC backplane power level)	HIGH: Above 26.40 V	Illuminates	HIGH: Above 26.40 V	Illuminates
	LOW: Below 22.60 V	Illuminates	LOW: Below 22.60 V	Illuminates
PsPri (Primary backplane power supply)	OK	Off	OK	Off
	FAIL	Blinks	FAIL	Blinks
PSsec (Secondary backplane power supply)	OK	Off	OK	Off
	FAIL	Blinks	FAIL	Blinks
CW Mode (Continuous wave mode)	On	Illuminates	On	Blinks
	Off	Off	Off	Off

Monitor Status Parameters

Introduction

From the STATUS screen on the transmitter, you can check various parameters to verify the status of the transmitter.

Status Information

The following transmitter status information is available:

- Laser power level
- Laser bias current
- Module SMC ID
- Laser temperature
- RF input status
- Continuous wave mode
- Module temperature
- +5 V DC analog power level
- +5 V DC digital power level
- -5 V DC power supply status
- +15 V DC digital power level
- +24 V DC digital power level
- Power supply status

Note: Not all status parameters listed above apply to all Model 6473 Forward Transmitters.

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STATUS Screen Description

The first STATUS screen is called the Summary STATUS screen, and it provides the following transmitter information:

- Laser power in dBm
- Laser bias current in mA
- SMC ID of the transmitter

When in the summary STATUS screen, press the Select key on the transmitter to rotate through the remaining parameters.

Each parameter has its own STATUS screen that displays the following information:

- The parameter being monitored
- The measured level of the parameter being monitored
- A FAIL indication for parameters without an operating range that are not working
- Assessment of the measured level, against the level required for normal operation, for items without an operating range

The following table shows the assessments that can be displayed for each measured item.

STATUS Screen Value	Description
OK	The measured level is within the range for normal operation.
HIGH	The measured level is above the range for normal operation.
LOW	The measured level is below the range for normal operation.
FAIL	Component, test, or signal failure (for parameters without an operating range).

Continued on next page

Monitoring Status Parameters

The following table describes each status parameter.

Parameter	6473-NC Overlay Transmitter	6473-10 750 MHz Transmitter	6473-12 750 MHz Transmitter	6473 870 MHz Transmitter	6473-10 870 MHz Transmitter
Summary STATUS Screen:					
• Power	0.0 dBm to +16.0 dBm	0.0 dBm to +16.0 dBm	0.0 dBm to +16.0 dBm	0.0 dBm to +16.0 dBm	0.0 dBm to +16.0 dBm
• Bias current to the laser	0 mA to 108 mA	0 mA to 108 mA	0 mA to 108 mA	0 mA to 108 mA	0 mA to 108 mA
• SMC ID	Programmable 0001 to 65535	Programmable 0001 to 65535	Programmable 0001 to 65535	Programmable 0001 to 65535	Programmable 0001 to 65535
Power (Output power of the laser)	0.0 dBm to +16.0 dBm	0.0 dBm to +16.0 dBm	0.0 dBm to +16.0 dBm	0.0 dBm to +16.0 dBm	0.0 dBm to +16.0 dBm
Bias (Bias current to the laser)	0 mA to 108 mA	0 mA to 108 mA	0 mA to 108 mA	0 mA to 108 mA	0 mA to 108 mA
Ltemp (Laser temperature)	N/A	0.0°C to 255.0°C	0.0°C to 255.0°C	0.0°C to 255.0°C	0.0°C to 255.0°C
RFlvl (Level of RF input)	0 V to +10.81 V	0 V to +10.81 V	0 V to +10.81 V	LOW, HIGH, or OK	0 V to +10.81 V
CW Mode (Continuous wave mode)	N/A	On or Off	On or Off	On or Off	On or Off
Rel RFdrv (RF drive level to the laser)	-1.5 dB to +1.5 dB	-1.5 dB to +1.5 dB	-1.5 dB to +1.5 dB	-1.5 dB to +1.5 dB	-1.5 dB to +1.5 dB

Continued on next page

Parameter	6473-NC Overlay Transmitter	6473-10 750 MHz Transmitter	6473-12 750 MHz Transmitter	6473 870 MHz Transmitter	6473-10 870 MHz Transmitter
Mtemp (Transmitter temperature)	0°.0C to 108.0°C	0.0°C to 108.0°C	0.0°C to 108.0°C	0.0°C to 108.0°C	0.0°C to 108.0°C
A5Vdc (+5 V DC analog power level)	0 V DC to +10.81 V DC	0 V DC to +10.81 V DC	0 V DC to +10.81 V DC	0 V DC to +10.81 V DC	0 V DC to +10.81 V DC
D5Vdc (+5 V DC digital power level)	0 V DC to +10.81 V DC	0 V DC to +10.81 V DC	0 V DC to +10.81 V DC	0 V DC to +10.81 V DC	0 V DC to +10.81 V DC
-5Vdc (-5 V DC power level)	0 V DC to –9.80 V DC	0 V DC to –9.80 V DC	0 V DC to –9.80 V DC	0 V DC to –9.80 V DC	0 V DC to –9.80 V DC
15Vdc (+15 V DC digital power level)	0 V DC to +32.42 V DC	0 V DC to +32.42 V DC	0 V DC to +32.42 V DC	0 V DC to +32.42 V DC	0 V DC to +32.42 V DC
24Vdc (+24 V DC digital power level)	0 V DC to +51.43 V DC	0 V DC to +51.43 V DC	0 V DC to +51.43 V DC	0 V DC to +51.43 V DC	0 V DC to +51.43 V DC
PSPri (Primary power supply)	OK or FAIL	OK or FAIL	OK or FAIL	OK or FAIL	OK or FAIL
PSSec (Secondary power supply)	OK or FAIL	OK or FAIL	OK or FAIL	OK or FAIL	OK or FAIL

Notes:

- The Output Power of the Laser can be turned off to facilitate troubleshooting or servicing.
- Turning on Continuous Wave Mode disables the alarm for high RF Input.

General Troubleshooting Information

Introduction

The following information:

- Lists the equipment you might need to troubleshoot the transmitters
- Explains how to obtain troubleshooting assistance

Needed Equipment

You might need the following equipment to troubleshoot the transmitters:

- Digital voltmeter
- Spectrum analyzer
- Fiber connector cleaning materials

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the transmitters, take note of the following warnings.

WARNING:

- **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
- **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Test the Power and Communications Connector

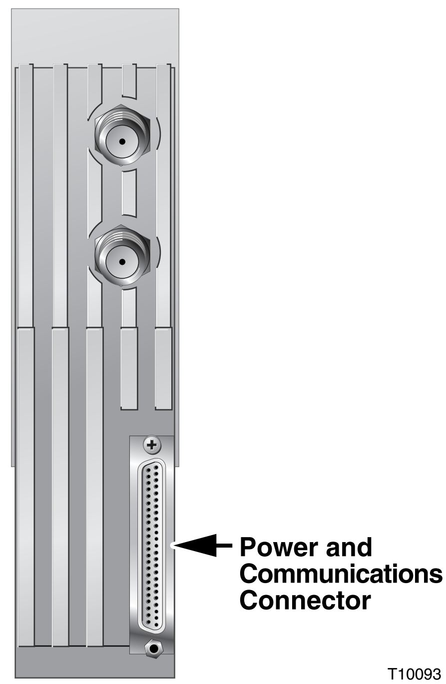
Introduction

During troubleshooting, you may need to test the power and communications connector. The following pages:

- Explain how to locate the connector on the transmitter
- Describe the connector pins

Locating the Power and Communications Connector

Use the following diagram to locate the connector. Then, refer to the pin-out diagram on the following page to assist you in troubleshooting.



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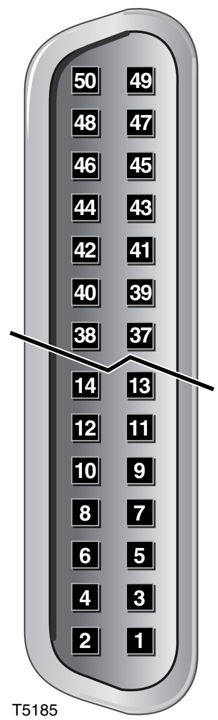
Connector Pin-Out Key

Refer to the following illustration and table when troubleshooting the following functions:

- Power
- Alarm
- Status monitoring



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Pin No.	Description		
	6473-NC Overlay Transmitter	6473 870 MHz Transmitter	Transmitters: • 6473-10 750 MHz • 6473-10 870 MHz • 6473-12 750 MHz
1	No connection	Ground	Contact closure on right-side amplifiers
2	Contact closure for alarm status	Contact closure for alarm status	Contact closure on left-side amplifiers
3–6	+5 V digital	+5 V digital	+5 V digital
7–10	Ground	Ground	Digital ground
11	+5 V digital	+5 V digital	+5 V digital
12	Ground	Ground	Digital ground
13	Power supply status (secondary)	Power supply status (secondary)	No connection
14	Power supply status (primary)	Power supply status (primary)	No connection
15	Slot ID pin 1	Slot ID pin 1	No connection
16	Slot ID pin 0	Slot ID pin 0	No connection
17	Slot ID pin 3	Slot ID pin 3	No connection
18	Slot ID pin 2	Slot ID pin 2	No connection
19	Transmit block (active low)	Transmit block (active low)	Transmit block (active low)
20	Handheld enable (active low)	Handheld enable (active low)	Handheld enable (active low)
21–22	Ground	Ground	No connection
23	RS-232 receive data	RS-232 receive data	RS-232 receive data
24	RS-232 transmit data	RS-232 transmit data	RS-232 transmit data

Continued on next page

Pin No.	Description		
	6473-NC Overlay Transmitter	6473 870 MHz Family of Transmitters	Transmitters: • 6473-10 750 MHz • 6473-10 870 MHz • 6473-12 750 MHz
25	Ground	Ground	No connection
26	Ground	Ground	No connection
27	+5 V analog	+5 V analog	No connection
28	+5 V analog	+5 V analog	No connection
29–30	24 V DC	24 V DC	24 V DC
31	-5 V DC	-5 V DC	No connection
32	-5 V DC	-5 V DC	No connection
33	Ground	Ground	No connection
34	Ground	Ground	No connection
35	Ground	Ground	No connection
36	24 V DC	24 V DC	24 V DC
37–38	No connection	No connection	No connection
39–42	24 V DC	No connection	24 V DC
43	No connection	RS-485 +	No connection
44	Ground	No connection	No connection
45	No connection	Chassis ID pin 0	SMC transmit enable
46	Ground	No connection	No connection
47	No connection	RS-485 -	SMC receive data
48	Ground	No connection	No connection
49	No connection	Chassis ID pin 1	SMC transmit data
50	Ground	No connection	No connection

Troubleshoot Alarm Conditions

Introduction

The following tables provide information about transmitter and power supply alarms. If the amber FAULT indicator is illuminated or blinking, check the transmitter display to determine the cause of the alarm.

Troubleshooting Transmitter Alarms

The following table shows the possible causes of transmitter alarms and their solutions.

Note: The Laser Temperature parameter is not available in the 6473-NC Overlay transmitter.

Alarm	Status	Possible Causes	Possible Solutions
Software self test	OK	No alarms.	No action required.
	Failed	One or more power supply voltages are out of specification.	Refer to **Troubleshooting Power Supply Alarms** later in this chapter.
		RF Input level is out of specification.	See RF Level alarm later in this table.
		Laser temperature out of specification.	See Laser Temperature alarm, later in this table.
Laser power level	High or Low	Laser or module temperature could be too high.	See Laser Temperature alarm or Module Temperature alarm later in this table.
		RF level could be out of specification.	See RF Level alarm, later in this table
Laser bias current	High or Low	Automatic power control circuit failure.	Telephone the Scientific-Atlanta assistance center in your area.
Laser temperature	High or Low	Cooling fan failure.	Verify that the fans inside the chassis are working.

Continued on next page

<table>
<tr><th>Alarm</th><th>Status</th><th>Possible Causes</th><th>Possible Solutions</th></tr>
<tr><td>RF level</td><td>High or Low</td><td>RF level at the input is out of specification.</td><td>Verify the RF input is within tolerance. Repair or adjust as needed.</td></tr>
<tr><td rowspan="3">Module temperature</td><td rowspan="3">Mtemp High</td><td>Ambient temperature is too high due to:
• A failure in the temperature control system.</td><td>Diagnose the problem and repair or replace as needed.</td></tr>
<tr><td>• Airflow through the rack has been restricted or cut off.</td><td>Ensure the airflow system has not been damaged or removed. Repair or replace as needed.</td></tr>
<tr><td>• Prisma chassis cooling fans are not operating properly.</td><td>Refer to the Prisma Model 6470-R2 Chassis Installation and Operation Guide, part number 570107, to troubleshoot the chassis cooling fans.</td></tr>
</table>

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Troubleshooting Power Supply Alarms

The following table shows the possible causes of power supply alarms and their solutions.

Alarm	Status	Possible Causes	Possible Solutions
• +5 V DC analog power • +5 V DC digital power • -5 V DC digital power • +15 V DC digital power • +24 V DC digital power	High or Low	Loose, unplugged, or damaged power cords.	Check the power supply power cord and connections.
		No AC at receptacle.	Check receptacle for AC power.
		A blown fuse on the power supply.	Check the power supply fuse. Repair or replace as needed.
		A faulty power supply module.	Verify proper power supply module operation. Repair or replace as needed.
		The transmitter is not seated properly in the chassis.	Verify that the transmitter is securely connected to the chassis.
		A faulty transmitter module.	The transmitter may be faulty and should be replaced.
		No power within chassis.	Check receptacle for AC power. If OK, the chassis may have a problem. For help, telephone the Scientific-Atlanta assistance center in your area.
Backplane power supply status (primary and secondary)	PSPri or PSsec Fail	The power supply status is: • Reported as in alarm • Not reported at all	Verify the operation of the power supplies. If they are functioning properly and no power supply related alarms are reported on any module in the chassis, the chassis may have a problem. For help, telephone the Scientific-Atlanta assistance center in your area.

Transmitter Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the transmitter and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the transmitter with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record laser power level, laser temperature readings, laser bias current, or power supply voltages.

Large variations in any of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called "canned air")

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use "Kleenex-type" tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

Continued on next page

Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Section B
Prisma Model 6473-R Reverse Transmitter

Overview

Introduction

The information in this section applies to the Prisma Model 6473-R Reverse Transmitter.

In This Section

This section contains the following topics.

Monitor Alarm Parameters

Introduction

From the ALARMS screen on the transmitter, you can determine whether there is a transmitter alarm condition and, if there is an alarm condition, the cause of the alarm.

If an alarm condition:

- Is present, the cause of the condition displays on the screen. Items that are not in the alarm state are passed over and are not displayed.
- Is not present, the message **No Alarms** displays on the screen.

Alarm Information

The following transmitter alarm information is available:

- Software self test
- Laser power level
- Laser bias current
- Laser temperature
- RF input status
- Module temperature
- +5 V DC digital power level
- +5 V DC analog power level
- -5 V DC power level
- +15 V DC power level
- +24 V DC backplane power level
- Backplane power supply status (primary and secondary)

Continued on next page

ALARMS Screen Description

The ALARMS screens let you quickly determine the cause of an alarm. When an ALARMS screen is active, press the Select key on the transmitter to rotate through the active alarms.

Each screen also displays the current parameter. If no alarm is active for a particular parameter, the module does not display that screen.

The following table shows the values displayed on the ALARMS screen for out-of-range errors or a failure.

ALARMS Screen Value	Description
OK	Component is operational or passes test (for parameters without an operating range).
HIGH	The measured level is above the operating range.
LOW	The measured level is below the operating range.
FAIL	Component, test, or signal failure (for parameters without an operating range).

Continued on next page

Monitoring Alarm Parameters

The following table describes each alarm parameter.

Parameter	Meaning	Values	Alarm Indicator
Self Test	Software self test	OK	Off
		FAILED	Illuminates
Power	Laser power level	HIGH	Blinks
		LOW	Illuminates
Bias	Laser bias current	HIGH	Blinks
		LOW	Illuminates
Ltemp	Laser temperature	HIGH	Off
		LOW	Illuminates
RF Level	RF level	HIGH	Off
		LOW	Illuminates
MTemp	Module temperature	HIGH: Above 100.0°C	Blinks
D5Vdc	+5 V DC digital power level	HIGH: 5.25 V	Illuminates
		LOW: Below 4.75 V	Illuminates
A5Vdc	+5 V DC analog power level	HIGH: Above 5.50 V	Illuminates
		LOW: Below 4.50 V	Illuminates
-5Vdc	-5 V DC power level	HIGH: Above -5.50 V	Illuminates
		LOW: Below -4.50 V	Illuminates
15Vdc	+15 V DC control card power level	HIGH: Above 16.50 V	Illuminates
		LOW: Below 13.50 V	Illuminates
24Vdc	+24 V DC backplane power level	HIGH: Above 26.40 V	Illuminates
		LOW: Below 22.60 V	Illuminates
PSPri	Primary backplane power supply status	OK	Illuminates
		FAIL	Blinks
PSsec	Secondary backplane power supply status	OK	Illuminates
		FAIL	Blinks

Monitor Status Parameters

Introduction

From the STATUS screen on the transmitter, you can check various parameters to verify the status of the transmitter.

Status Information

The following transmitter status information is available:

- Laser power level
- Laser bias current
- Module SMC ID
- Laser temperature
- RF input status
- Module temperature
- +5 V DC digital power level
- +5 V DC analog power level
- -5 V DC backplane power level
- +15 V DC control card power level
- +24 V DC backplane power level
- Power supply status

Continued on next page

STATUS Screen Description

The first STATUS screen is called the Summary STATUS screen, and it provides the following transmitter information:

- Laser power in dBm
- Laser bias current in mA
- SMC ID of the transmitter

When in the summary STATUS screen, press the Select key on the transmitter to rotate through the remaining parameters.

Each parameter has its own STATUS screen that displays the following information:

- The parameter being monitored
- The measured level of the parameter being monitored
- A FAIL indication for parameters without an operating range that are not working
- Assessment of the measured level, against the level required for normal operation, for items without an operating range

The following table shows the assessments that can be displayed for each measured item.

STATUS Screen Value	Description
OK	The measured level is within the range for normal operation.
HIGH	The measured level is above the range for normal operation.
LOW	The measured level is below the range for normal operation.
FAIL	Component, test, or signal failure (for parameters without an operating range).

Continued on next page

Monitoring Status Parameters

The following table describes each status parameter.

Parameter	Meaning	Operating Range
Summary STATUS Screen:		
• Power	Laser power	+18.0 dBm to -3.0 dBm
• Bias	Laser bias current	+18.0 mA to -3.0 mA
• ID	SMC ID	Programmable 0001 to 65535
Power	Laser power	+18.0 dBm to -3.0 dBm
Bias	Laser bias current	20 mA to 90 mA
Ltemp	Laser temperature	OK, HIGH, or LOW
Rflvl	RF level	OK, HIGH, or LOW
RFLow	RF low alarm	On or Off
Rel RFdrv	RF drive level	-1.5 dB to +1.5 dB
Mtemp	Module temperature	-5.0°C to 50.0°C
D5Vdc	+5 V DC digital power level	+4.75 V DC to +5.25 V DC
A5Vdc	+5 V DC analog power level	+4.5 V DC to +5.5 V DC
-5Vdc	-5 V DC backplane power level	-4.5 V DC to -5.5 V DC
15Vdc	+15 V DC control card power level	+13.5 V DC to +16.5 V DC
24Vdc	+24 V DC backplane power level	+21.5 V DC to +26.5 V DC
PSpri	Primary backplane power supply status	OK or FAIL
Pssec	Secondary backplane power supply status	OK or FAIL

General Troubleshooting Information

Introduction

The following information:

- Lists the equipment you might need to troubleshoot the transmitter
- Explains how to obtain troubleshooting assistance

Needed Equipment

You might need the following equipment to troubleshoot the transmitter:

- Digital voltmeter
- Spectrum analyzer

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the transmitter, take note of the following warnings.

> ⚠ **WARNING:**
>
> - **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
> - **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The following tables provide information about transmitter and power supply alarms. If the amber FAULT indicator is illuminated or blinking, check the transmitter display to determine the cause of the alarm.

Troubleshooting Transmitter Alarms

The following table shows the possible causes of transmitter alarms and their solutions.

Alarm	Status	Possible Causes	Possible Solutions
Software self test	OK	No alarms.	No action required.
	Failed	One or more power supply voltages are out of specification.	Refer to **Troubleshooting Power Supply Alarms** later in this section.
Laser power level	High or Low	RF level at the input is out of specification.	Verify the input RF level is within specification.
Laser bias current	High or Low	Automatic power control circuit failure.	Telephone the Scientific-Atlanta assistance center in your area.
Laser temperature	High or Low	Cooling fan failure.	Verify that the fans inside the chassis are working.

Continued on next page

Alarm	Status	Possible Causes	Possible Solutions
RF level	High or Low	RF level at the input is out of specification.	Verify the RF input is within tolerance. Repair or adjust as needed.
Module temperature	Mtemp High	Ambient temperature is too high due to: • A failure in the temperature control system.	Diagnose the problem and repair or replace as needed.
		• Airflow through the rack has been restricted or cut off.	Ensure the airflow system has not been damaged or removed. Repair or replace as needed.
		• Prisma chassis cooling fans are not operating properly.	Refer to the *Prisma Model 6470-R2 Chassis Installation and Operation Guide*, part number 570107, to troubleshoot the chassis cooling fans.

Continued on next page

Troubleshooting Power Supply Alarms

The following table shows the possible causes of power supply alarms and their solutions.

Note: Some or all of the steps will cause a service interruption.

<table>
<tr><th>Alarm</th><th>Status</th><th>Possible Causes</th><th>Possible Solutions</th></tr>
<tr><td rowspan="6">+5 V DC analog power
+5 V DC digital power
-5 V DC digital power
+15 V DC digital power
+24 V DC digital power</td><td rowspan="6">High or Low</td><td>Loose, unplugged, or damaged power cords.</td><td>Check the power supply power cord and connections.</td></tr>
<tr><td>A blown fuse on the power supply.</td><td>Check the power supply fuse. Repair or replace as needed.</td></tr>
<tr><td>A faulty power supply module.</td><td>Verify proper power supply module operation. Repair or replace as needed.</td></tr>
<tr><td>The transmitter is not seated properly in the chassis.</td><td>Verify that the transmitter is securely connected to the chassis.</td></tr>
<tr><td>Damage to the chassis or module backplane connector.</td><td>Verify that DC power is present at the receptacle in the chassis and that there is no visible damage.</td></tr>
<tr><td>A faulty transmitter module.
No AC at receptacle</td><td>Are any other units in this chassis having the same problem?
If no, the transmitter may be faulty and should be replaced.
If yes, the chassis may have a problem.
For help, telephone the Scientific-Atlanta assistance center in your area.</td></tr>
</table>

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Troubleshoot Alarm Conditions, Continued

Alarm	Status	Possible Causes	Possible Solutions
Backplane power supply status (primary and secondary)	PSPri or PSsec Fail	The power supply status is: • Reported as in alarm • Not reported at all	• Verify that the transmitter is securely seated in the chassis. • Verify the operation of the power supplies. If they are functioning properly and no power supply related alarms are reported on any module in the chassis, the chassis may have a problem. For help, telephone the Scientific-Atlanta assistance center in your area.

Transmitter Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the transmitter and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the transmitter with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record laser power level, laser temperature readings, laser bias current, or power supply voltages.

Large variations in any of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called "canned air")

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use "Kleenex-type" tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

Continued on next page

Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Section C
Prisma Model 6475 Transmitters

Overview

Introduction

The information in this section applies to the following Prisma Model 6475 Transmitters:

- Model 6475-9 CEMT 1550 nm Externally Modulated Transmitter
- Model 6475L EMT 1550 nm Externally Modulated Transmitter
- Model 6475Q 1550 nm Forward Transmitter
- Model 6475R ITU 1550 nm Externally Modulated Transmitter
- Model 6475S Gap Bridger 1550 nm Externally Modulated Transmitter

In This Section

This section contains the following topics.

Monitor Alarm Parameters

Introduction

From the ALARMS screen on the transmitter, you can determine whether there is a transmitter alarm condition and, if there is an alarm condition, the cause of the alarm.

If an alarm condition:

- Is present, the cause of the condition displays on the screen. Items that are not in the alarm state are passed over and are not displayed.
- Is not present, the message **No Alarms** displays on the screen.

Alarm Information

The following transmitter alarm information is available:

- Software self test
- Power output
- Photodiode current
- Laser bias current
- Composite OMI/RF
- TE cooler current
- TE cooler temperature
- Linearizer heat sink temperature
- Modulator bias test point voltage
- RF power
- PLL lock status
- Key switch position
- Laser temperature
- Module temperature
- +5 V DC analog power level
- +5 V DC digital power level
- -5 V DC analog power level
- +15 V DC analog power level
- +24 V DC analog power level
- Backplane power supply status (primary and secondary)

Continued on next page

ALARMS Screen Description

The ALARMS screens let you quickly determine the cause of an alarm. When an ALARMS screen is active, press the Select key on the transmitter to rotate through the active alarms.

Each screen also displays the current parameter. If no alarm is active for a particular parameter, the module does not display that screen.

Alarm Parameters

The following table describes each alarm parameter.

Parameter	Meaning	Description
No Alarms	No alarms	No alarms are active.
Self Test	Software self test	Software self test failed.
Pout	Power output	Transmitter power is outside its normal operating range.
Lpout	Photodiode current	Photodiode current is outside its normal operating range.
Lbias	Laser bias	Laser bias current is outside its normal range.
RFlvl	Composite OMI/RF	Composite OMI/RF power level is outside its normal operating range.
Itec	TE cooler current	TE cooler current level is outside its normal operating range.
Ttemp	TE cooler temperature	TE cooler temperature is outside its normal operating range.
Htemp	Linearizer heat sink	The linearizer heat sink temperature is outside its normal operating range.
Mbias	Modulator bias	The modulator bias test point voltage is outside normal operating range.
Psbs	RF power	The RF power detection of SBS is outside its normal range.
Lock1	PLL lock status	The PLL lock status for SBS synthesizer 1 has failed.

Continued on next page

Parameter	Meaning	Description
Lock2	PLL lock status	The PLL lock status for SBS synthesizer 2 has failed.
KeySw	Key switch position	The key switch is in the OFF position.
Ltemp	Laser temperature	The laser temp is not between 20°C and 30°C.
Mtemp	Module temperature	The module temperature is above 100.0°C.
A5Vdc	+5 V DC analog power level	The +5 V DC power level for analog circuitry is outside its normal range.
D5Vdc	+5 V DC digital power level	The +5 V DC power level for digital circuitry is outside its normal range.
-5Vdc	-5 V DC analog power level	The -5 V DC power level is not between -4.50 V and -5.50 V.
15Vdc	+15 V DC analog power level	The +15 V DC power level is not between 13.50 V and 16.50 V.
24Vdc	+24 V DC analog power level	The +24 V DC power level is not between 22.60 V and 26.40 V.
PSpri	Power supply	The primary backplane power supply alarm.
PSsec	Power supply	The secondary backplane power supply alarm.

Monitor Status Parameters

Introduction

From the STATUS screen on the transmitter, you can check various parameters to verify the status of the transmitter.

Status Information

The following transmitter status information is available:

- Laser power level
- Laser bias current
- Module SMC ID
- Laser temperature
- RF input status
- Continuous wave (CW) mode
- RF relative drive level
- Module temperature
- +5 V DC digital power level
- +5 V DC analog power level
- -5 V DC power level
- +15 V DC internal power level
- +24 V DC power level
- Power supply status

Note: Not all status parameters listed above apply to all Model 6475 Transmitters.

Continued on next page

STATUS Screen Description

The first STATUS screen is called the Summary STATUS screen, and it provides the following transmitter information:

- Laser power in dBm
- Laser bias current in mA
- SMC ID of the transmitter

When in the summary STATUS screen, press the Select key on the transmitter to rotate through the remaining parameters.

Status Parameters

The following table describes each status parameter.

Note: The Continuous Wave Mode parameter applies only to the Model 6475Q Forward Transmitter.

Parameter	Meaning	Description
Summary STATUS Screen:		
• Power	Module summary	Laser power
• Bias		Laser bias current in mA
• ID		Unit SMC ID number
Power	Laser power	Laser power in dBm
Bias	Laser bias	Laser bias current in mA
Ltemp	Laser temperature	Laser temperature in degrees Celsius
RFlvl	RF level	RF input status
CW Mode	Continuous wave operation	Continuous wave operation status
Rel RFdrv	RF drive level	RF relative drive level offset in dB
Mtemp	Module temperature	Module temperature in degrees Celsius

Continued on next page

Monitor Status Parameters, Continued

Parameter	Meaning	Description
D5Vdc	+5 V DC digital	+5 V DC supply for digital circuitry status
A5Vdc	+5 V DC	+5 V DC supply for analog circuitry status
-5Vdc	-5 V DC	-5 V DC supply status
15Vdc	+15 V DC	+15 V DC internal supply status
24Vdc	+24 V DC	+24 V DC supply status
PSpri	Power supply	Primary backplane power supply status
PSsec	Power supply	Secondary backplane power supply status

Transmitter Specifications

Introduction

The specifications listed in the following tables can be useful when troubleshooting the transmitters.

Model 6475-9 CEMT 1550 nm Externally Modulated Transmitter

Power Requirements

Parameter	Values
Power supply	• Model 6470 (Rev 2) Chassis • Model 6471 Power Supply
Power consumption	Maximum: 45 watts

Environmental Specifications

Parameter	Values
Operating temperature	0.0°C to +40.0°C
Humidity	Maximum: 85%, non-condensing

Optical Characteristics

Parameter	Values
Wavelength	1550–1560 nm
Optical connectors	E-2000
Power stability	± 5% over temperature range
SBS threshold (50 km standard fiber)	Equal to output power

Continued on next page

RF Electrical Characteristics

Parameter	Values
RF input levels	+ 24.0 dBm V/channel
Return loss	• 16.0 dB (45–550 MHz) • 14.0 dB (550–865 MHz)
Bandwidth	45–870 MHz
Frequency response	± 0.9 dB

Performance Characteristics

Note: CNR is specified for 78 unmodulated NTSC channels with 3 dBm received power at the detector. CNR for other channel plans will differ slightly from this. All measurements are made using E-2000 connectors. Other connectors may degrade performance slightly.

Parameter	Values
CNR	• Minimum: 54.5 dB • Typical: 55.0 dB
CSO	< -68.0 dBc
CTB	< -68.0 dBc

Continued on next page

Model 6475L EMT 1550 nm Externally Modulated Transmitter

Power Requirements

Parameter	Values
Power supply	• Model 6470 (Rev 2) Chassis • Model 6471 Power Supply
Power consumption	Maximum: 45 watts

Environmental Specifications

Parameter	Values
Operating temperature	0.0°C to +40.0°C
Humidity	Maximum: 85%, non-condensing

Optical Characteristics

Parameter	Values
Wavelength	1550–1560 nm
Optical connectors	E-2000
Power stability	± 5% over temperature range
SBS effective threshold (50 km standard fiber)	16.0 dBm

RF Electrical Characteristics

Parameter	Values
RF input levels	+25.0–29.5 dBm V/channel **Note:** Refer to **RF Input Levels** that follows.
Return loss	• 16.0 dB (45–550 MHz) • 14.0 dB (550–865 MHz)
Bandwidth	45–865 MHz
Frequency response	± 0.9 dB

Continued on next page

RF Input Levels

Note: 0.0 dBm V is equivalent to the power associated with 1 mV across a 75-ohm load.

Model Number	Channel Load	Power Per Channel (dBm V)		
		Minimum	Nominal	Maximum
6475-6n80	77 NTSC	24.5	27.0	29.5
6475-6n110	110 NTSC	22.5	25.0	27.5
6475-6	42 Cenelec	27.0	29.5	32.0
6475-6c860	60 PAL B/G	25.5	28.0	30.5
6475-6i	42 Cenelec	23.0	25.5	28.0

Performance Characteristics

Note: CNR is specified for 78 unmodulated NTSC channels with 0 dBm received power at the detector. CNR for other channel plans will differ slightly from this. All measurements are made using E-2000 connectors. Other connectors may degrade performance slightly.

Parameter	Values
CNR	• Minimum: 53.0 dB • Typical: 53.5 dB
CSO	< -65.0 dBc
CTB	< -65.0 dBc

Continued on next page

Model 6475Q 1550 nm Forward Transmitter

Power Requirements

Parameter	Values
Power supply	• Model 6470 (Rev 2) Chassis • Model 6471 Power Supply
Power consumption	Maximum: 25 watts

Environmental Specifications

Parameter	Values
Operating temperature	0.0°C to +50.0°C
Storage temperature	-25.0°C to +70.0°C
Humidity	Maximum: 20% to 80%, non-condensing

Optical Characteristics

Parameter	Values	
Available wavelengths (± 0.1 nm)	1531.90 nm	1549.32 nm
	1533.47 nm	1550.92 nm
	1535.04 nm	1552.52 nm
	1536.61 nm	1554.13 nm
	1538.19 nm	1555.75 nm
	1539.77 nm	1557.36 nm
	1541.35 nm	1558.98 nm
	1542.94 nm	1560.61 nm
SBS threshold (50 km standard fiber)	> 6.0 dB	

Continued on next page

RF Electrical Characteristics

Parameter	Values
Channel loading	16 NTSC
RF drive per channel	22 ± 1.5 dBm V
Return loss (for 45–870 MHz)	Minimum: 14 dB
Output power	• +3.0 dBm (external mod) • +8.0 dBm (direct mod) • +10.0 dBm (direct mod)
Frequency range	5–200 MHz

Performance Characteristics

Note: CNR is specified for 5–40 MHz with notch at 22 MHz.

Parameter	Values
CNR	Minimum: 50 dB
CSO	Maximum: -60.0 dBc
CTB	Maximum: -60.0 dBc
Spurious noise	Minimum: -60.0 dBc
Flatness	• ± 0.50 dB (45–550 MHz) • ± 0.75 dB (45–870 MHz)

Continued on next page

Model 6475R ITU 1550 nm Externally Modulated Transmitter

Power Requirements

Parameter	Values
Power supply	• Model 6470 (Rev 2) Chassis • Model 6471 Power Supply
Power consumption	Maximum: 45 watts

Environmental Specifications

Parameter	Values
Operating temperature	0.0°C to +50.0°C
Storage temperature	-25.0°C to +70.0°C
Humidity	Maximum: 20% to 80%, non-condensing

Optical Characteristics

Parameter	Values	
Available wavelengths (± 0.1 nm)	1531.90 nm	1549.32 nm
	1533.47 nm	1550.92 nm
	1535.04 nm	1552.52 nm
	1536.61 nm	1554.13 nm
	1538.19 nm	1555.75 nm
	1539.77 nm	1557.36 nm
	1541.35 nm	1558.98 nm
	1542.94 nm	1560.61 nm
SBS threshold (50 km standard fiber)	> 6.0 dB	

Continued on next page

RF Electrical Characteristics

Parameter	Values
RF drive levels	-40.0 to –56.0 dBm V/Hz
Return loss	Minimum: 14.0 dB
Output power	+7.0 to +9.5 dBm
Frequency range	5–200 MHz

Performance Characteristics

Note: CNR is specified for 5–40 MHz with notch at 22 MHz.

Parameter	Values
CNR	• Minimum: 43.0 dB • Typical: 46.0 dB
Spurious noise	Minimum: 60.0 dBc
Flatness (5–200 MHz)	± 0.75 dB
Slope (5–200 MHz)	+0.50 dB to +1.5 dB
Bit error rate	$< 10^{-9}$

Continued on next page

Model 6475S ITU 1550 nm Externally Modulated Transmitter

Power Requirements

Parameter	Values
Power supply	• Model 6470 (Rev 2) Chassis • Model 6471 Power Supply
Power consumption	• Typical: 25 watts • Maximum: 35 watts

Environmental Specifications

Parameter	Values
Operating temperature	0.0°C to +50.0°C
Storage temperature	-30.0°C to +80.0°C
Humidity	Maximum: 85%, non-condensing

Optical Specifications

Parameter	Values
Wavelength	1530–1563 nm
Output power	• Model 6475S-7: 6.75–7.75 dBm • Model 6475S-9: 8.75–9.75 dBm • Model 6475S-11: 10.75–11.75 dBm
Optical connectors	SC/APC
OMI	Typical: 3%
SBS effective threshold	≤ rated output
Spurious noise	-65.0 dBc

Continued on next page

RF Electrical Specifications

Parameter	Values
RF input levels	+22 ± 3 dBm V/channel
Return loss	16.0 dB
Response flatness	• ± 0.5 dB (45–550 MHz) • ± 0.75 dB (550–865 MHz)
Bandwidth	45–870 MHz
Frequency response	± 0.5 dB

Performance Specifications

Note: CNR is specified for 78 unmodulated NTSC channels with 0 dBm received power at the detector. CNR for other channel plans will differ slightly from this. All measurements are made using E-2000 connectors. Other connectors may degrade performance slightly.

Parameter	Values
CNR	• Minimum: 53.0 dB • Typical: 53.5 dB
CSO	Typical: < -67.0 dBc
CTB	Typical: < -66.0 dBc

General Troubleshooting Information

Introduction

The following information:

- Lists the equipment you might need to troubleshoot the transmitter
- Explains how to obtain troubleshooting assistance

Needed Equipment

You might need the following equipment to troubleshoot the transmitter:

- Digital voltmeter
- Spectrum analyzer
- Fiber connector cleaning materials

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the transmitters, take note of the following warnings.

⚠ **WARNING:**

- **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
- **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The following troubleshooting information helps identify possible causes and solutions to transmitter alarm conditions.

Troubleshooting Alarms

Refer to the following table for troubleshooting assistance.

<table>
<tr><th>Alarm Condition</th><th>Possible Causes</th><th>Possible Solutions</th></tr>
<tr><td rowspan="3">AC power is off</td><td>Power connection is loose.</td><td>Secure all power connections and the line cord.</td></tr>
<tr><td>AC power failure.</td><td>Check other displays for power indication.</td></tr>
<tr><td>Module indicator is burned out.</td><td>Contact Scientific-Atlanta for a replacement.

For instructions, refer to Chapter 6, Customer Information.</td></tr>
<tr><td rowspan="3">SM indicator is off</td><td>Status monitoring not in use.</td><td>Normal situation. The SM indicator lights only when the transmitter has received data within the last 10 minutes.</td></tr>
<tr><td>SM connection is loose.</td><td>Secure the SM connector.</td></tr>
<tr><td>SM indicator is burned out.</td><td>Contact Scientific-Atlanta for a replacement.

For instructions, refer to Chapter 6, Customer Information.</td></tr>
<tr><td rowspan="2">Optical power is low or off</td><td>Fiber path is broken with bends or bad path.</td><td>• Check optical cable for breaks or bends tighter than the fiber specification, and correct the situation.
• Clean fiber connections. For instructions, refer to Fiber Optic Connector Cleaning Procedure later in this section.</td></tr>
<tr><td>Power failure.</td><td>Ensure that all AC power is present and all power connections are secure.</td></tr>
</table>

Transmitter Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the transmitter and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the transmitter with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record laser power level, laser temperature readings, laser bias current, or power supply voltages.

Large variations in any of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called "canned air")

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use "Kleenex-type" tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

Continued on next page

Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Section D
Prisma II Targeted Service Delivery Transmitter

Overview

Introduction

The information in this section applies to the Prisma II Targeted Service Delivery (TSD) Transmitter.

Note: For information about monitoring the Prisma II High Density Chassis, refer to Chapter 5, **Chassis.**

In This Section

This section contains the following topics.

Monitor Alarm Parameters Using the ICIM

Introduction

The Intelligent Communications Interface Module (ICIM) in the Prisma II Chassis allows you to scroll through and view alarms that may exist for the TSD Transmitter.

Transmitter Status LED Description

The Status LED located on the transmitter's front panel illuminates or blinks to indicate the state of the transmitter.

If the Status LED is illuminated red or blinking red, an alarm has been generated.

The following table shows each possible transmitter state.

If the Status LED:	This Indicates:
Illuminates green	the transmitter is operating properly with no alarms.
Blinks red	a minor alarm condition.
Illuminates red	a major alarm condition.

Alarm Information

The following transmitter alarm information is available.

- Optical output power
- Laser temperature

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor
- Major

Continued on next page

Monitoring Transmitter Alarm Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Targeted Service Transmitter MODULE menu. From the MODULE menu, press the ALRM key to display the ALARMS menu.

The following table describes each transmitter alarm parameter.

Parameter	Meaning	Values	Possible Solutions to Alarm
OutPwr	Optical output power	• OK • Minor alarm • Major alarm	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
LasTemp	Laser temperature	• OK • Minor alarm • Major alarm	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.

General Troubleshooting Information

Introduction

Because the main function of the chassis is to distribute power and establish communication links for the modules installed in the chassis, most troubleshooting involves the modules that are installed in the chassis. However, in some instances, you may need to troubleshoot the chassis.

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting, take note of the following warnings.

> ⚠ **WARNING:**
>
> - **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
> - **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The information in this section provides possible solutions to transmitter alarm conditions.

Troubleshooting Transmitter Alarms

The following table shows the possible solutions to transmitter alarms.

Parameter	Meaning	Values	Possible Solutions
OutPwr	Optical output power	• OK • Minor alarm • Major alarm	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
LasTemp	Laser temperature	• OK • Minor alarm • Major alarm	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.

Transmitter Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the transmitter and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the transmitter with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record laser power level, laser temperature readings, or power supply voltages.

Large variations in any of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called “canned air”)

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use “Kleenex-type” tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

Continued on next page

Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Section E
Prisma II 1310 nm Forward Transmitter

Overview

Introduction

The information in this section applies to the Prisma II 1310 nm Forward Transmitter.

In This Section

This section contains the following topics.

Monitor Alarm Parameters Using the ICIM

Introduction

The Intelligent Communications Interface Module (ICIM) in the Prisma II Chassis allows you to scroll through and view alarms that may exist for the transmitter.

Transmitter Alarm LED Description

The Alarm LED located on the transmitter's front panel illuminates or blinks to indicate the state of the transmitter.

The following table shows each possible transmitter state.

If the Alarm LED:	This Indicates:
Blinks	a minor alarm condition.
Illuminates	a critical alarm condition.

Alarm Information

The following transmitter alarm information is available:

- RF input level
- Optical output power
- Continuous wave (CW) mode
- Laser temperature
- Laser bias current
- Laser on/off status
- Bus voltage status

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Major low
- Minor high
- Major high

Continued on next page

Monitoring Alarm Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II 1310 nm Forward Transmitter MODULE menu. From the MODULE menu, press the ALRM key to display the ALARMS menu.

The following table describes each transmitter alarm parameter.

Parameter	Meaning	Values	Possible Solutions to Alarm
InRF	RF input level	-4.5 dB to +3.0 dB	RF source or cables.
OutPwr	Optical output power	±0.5 dBm of nominal	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
CwMode	CW mode	Fault	CwMode set to On.
LasTemp	Laser temperature	20.0°C to 30.0°C	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
LasBias	Laser bias	50 mA to 100 mA	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
Enable	Laser on/off status	Fault	Check Enable and Master CONFIG settings.
PsOK	Bus voltage status	Fault	Module not fully seated. Check power supply.

Monitor Status Parameters Using the ICIM

Introduction

The STATUS menu on the ICIM allows you to verify the status of the transmitter.

Status Information

The following transmitter status information is available.

- Optical output power
- Laser bias current
- RF input level
- Module temperature
- Laser thermoelectric cooler current
- Laser temperature
- Laser on/off status
- Continuous wave mode operation
- Low RF alarm enabled/disabled
- Master or slave operation
- RF drive level

Continued on next page

Monitoring Status Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II 1310 nm Forward Transmitter MODULE menu. From the MODULE menu, press the **STAT** key to display the STATUS menu.

The following table describes each transmitter status parameter.

Parameter	Units	Meaning
OutPwr	dBm	Optical output power
LasBias	mA	Laser bias current
InRF	dB	RF input level
ModTemp	°C	Module temperature
TecCur	mA	Laser thermoelectric cooler current
LasTemp	°C	Laser temperature
Enable	N/A	Laser on/off
CwMode	N/A	Continuous wave (CW) mode operation
LoRFInh	N/A	Low RF alarm enabled/disabled
Master	N/A	Master or slave operation
RFDrive	N/A	RF drive level

Configure Parameters Using the ICIM

Introduction

The CONFIG menu on the ICIM allows you to configure several transmitter parameters.

Configuring Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II 1310 nm Forward Transmitter MODULE menu. From the MODULE menu, press the CFG key to display the CONFIG menu.

The following table shows the configurable parameters for the transmitter.

Parameter	Description	Values	Default
Enable	Enables or disables transmitter operation (turns the laser on or off).	• On or Off	On
CwMode	Automatically adjusts the displayed RF input level by subtracting 3.0 dB when CW mode is on. The RF high alarm is also disabled when CW mode is on.	• On or Off	Off
LoRFInh	Enables or disables the RF Input Low alarm.	• On or Off	On
Master	Configures the module as master or slave. • If set to **Master,** the transmitter is controlled *only* by the Enable control above. • If set to **Slave,** the transmitter is controlled by a combination of Enable and the external input CNT_IN_1.	• Master or Slave	Master
RFDrive	Sets the relative RF drive level into the transmitter.	-1.5 dB to +1.5 dB in 0.5 dB steps	0.0 dB

Monitor Alarm Parameters Using LCI

Introduction

The Local Craft Interface (LCI) software allows you to view alarms that may exist for the transmitter.

Alarm Information

The following transmitter alarm information is available:

- RF input level
- Optical output power
- Continuous wave mode
- Laser temperature
- Laser bias current
- Laser on/off status
- Bus voltage status

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Major low
- Minor high
- Major high

Continued on next page

Monitoring Alarm Parameters

To monitor the alarms, navigate to the Module Details window of the transmitter (in the LCI module tree). The alarms are shown under the **Parameters** and **Alarms** headings.

The following table describes each transmitter alarm parameter.

Parameter	Meaning	Values	Possible Solutions to Alarm
RF Input Power	RF input level	-4.5 dB to +3.0 dB	RF source or cables.
Optical Output Power	Optical output power	±0.5 dBm of nominal	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
CW Mode	CW mode	• On • Off	CW Mode set to Off
Laser Temperature	Laser temperature	20.0°C to 30.0°C	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
Laser Bias Current	Laser bias	50 mA to 100 mA	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
Enable Laser	Laser on/off status	• Enable • Disable	Check Enable and Master CONFIG settings
PsOK	Bus voltage status	OK or FAIL	Module not fully seated. Check power supply.

Modify Alarm Limits Using LCI

Introduction

Using LCI, you can modify limits for several alarm parameters for the transmitter.

Modifying Alarm Parameters

To modify the parameters, navigate to the Module Details window of the Transmitter (in the LCI module tree). The parameters are shown under the **Parameters** heading.

The following table shows parameters with alarm limits that can be modified.

Parameter	Meaning	Values
RF Input Power	RF input level	-4.5 to +3.0 dB
Optical Output Power	Optical output power	±0.5 dBm of nominal

Monitor Status Parameters Using LCI

Introduction

The LCI software allows you to verify the status of the transmitter.

Status Information

The following transmitter status information is available.

- Optical output power
- Laser bias current
- RF input level
- Module temperature
- Laser thermoelectric cooler current
- Laser temperature
- Laser on/off
- Continuous wave mode operation
- Low RF alarm enabled/disabled
- Master or slave operation
- RF drive level

Continued on next page

Monitoring Status Parameters

To monitor the parameters, navigate to the Module Details window of the transmitter (in the LCI module tree). The alarms are shown under the **Parameters** and **Status** headings.

The following table describes each transmitter status parameter.

Parameter	Units	Meaning
Optical Output Power	dBm	Optical output power
Laser Bias Current	mA	Laser bias current
RF Input Power	dB	RF input level
Module Temperature	°C	Module temperature
TEC Current	mA	Laser thermoelectric cooler current
Laser Temperature	°C	Laser temperature
Enable Laser	N/A	Laser on/off
CW Mode	N/A	Continuous wave mode operation
Low RF Alarm Inhibit	N/A	Low RF alarm enabled/disabled
Master	N/A	Master or slave operation
RF Drive Level	N/A	RF drive level

Configure Parameters Using LCI

Introduction

The LCI software allows you to configure several transmitter parameters.

Configuring Parameters

To configure the parameters, navigate to the Module Details window of the transmitter (in the LCI module tree). The parameters are shown under the **Controls** heading.

The following table shows the configurable parameters for the transmitter.

Parameter	Description	Values	Default
Enable Laser	Enables or disables transmitter operation (turns the laser on or off)	• On = Enabled • Off = Disabled	Enabled
CW Mode	Automatically adjusts the displayed RF input level by subtracting 3 dB when CW mode is on. The RF high alarm is also disabled when CW mode is on.	• On • Off	Off
Low RF Alarm Inhibit	Enables or disables the RF Input Low alarm.	• On = Alarm enabled • Off = Alarm disabled	Enabled
Master	Configures the module as master or slave. • If set to **Master,** the transmitter is controlled *only* by the Enable control above. • If set to **Slave,** the transmitter is controlled by a combination of Enable and the external input CNT_IN_1.	• On = Master • Off = Slave	Master
RF Drive Level	Sets the relative RF drive level into the transmitter.	-1.5 dB to +1.5 dB in 0.5 dB steps	0.0 dB

General Troubleshooting Information

Introduction

The following information:

- Lists the equipment you might need to troubleshoot the transmitter
- Explains how to obtain troubleshooting assistance

Needed Equipment

You might need the following equipment to troubleshoot the transmitter:

- Digital voltmeter
- Fiber connector cleaning materials

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the transmitter, take note of the following warnings.

⚠ **WARNING:**

- **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
- **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The following troubleshooting information helps identify possible causes and solutions to transmitter alarm conditions.

Troubleshooting Alarms

If the red Alarm indicator is illuminated or blinking, check the ICIM display or the appropriate LCI screen to determine the cause of the alarm.

Refer to the following table for troubleshooting assistance.

Alarm	Status	Possible Causes	Possible Solutions
LasBias	Failed	Automatic power control circuit failure.	Telephone the Scientific-Atlanta assistance center in your area.
LasTemp	High or Low	Laser temperature out of specification. Laser could be faulty.	Telephone the Scientific-Atlanta assistance center in your area.
ModTemp	High or Low	Ambient temperature is too high due to: • A failure in the building air conditioning system. • Air flow through the rack has been restricted or cut off. • Chassis cooling fans are not operating properly.	Ensure the airflow system has not been damaged or removed. Repair or replace fan tray as needed. To troubleshoot the chassis cooling fans, refer to the *Prisma II Chassis Installation and Operation Guide*, part number 713375.
InRF	High or Low	RF source not transmitting. Faulty RF cables or connections.	Check RF source and cables and all connections.
OutPwr	High or Low	Laser could be faulty.	Telephone the Scientific-Atlanta assistance center in your area.

Transmitter Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the transmitter and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the transmitter with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record laser power level, laser temperature readings, laser bias current, or power supply voltages.

Large variations in any of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called "canned air")

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use "Kleenex-type" tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

Continued on next page

Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Section F
Prisma II 1310 nm Reverse Transmitter

Overview

Introduction

The information in this section applies to the Prisma II 1310 nm Reverse Transmitter.

In This Section

This section contains the following topics.

Monitor Alarm Parameters Using the ICIM

Introduction

The Intelligent Communications Interface Module (ICIM) in the Prisma II Chassis allows you to scroll through and view alarms that may exist for the transmitter.

Transmitter Alarm LED Description

The Alarm LED located on the transmitter's front panel illuminates or blinks to indicate the state of the transmitter.

The following table shows each possible transmitter state.

If the Alarm LED:	This Indicates:
Blinks	a minor alarm condition.
Illuminates	a critical alarm condition.

Alarm Information

The following transmitter alarm information is available:

- RF input level
- Optical output power
- Continuous wave (CW) mode
- Laser temperature
- Laser bias current
- Laser on/off status
- Bus voltage status

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Minor high
- Major low
- Major high

Continued on next page

Monitoring Alarm Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II 1310 nm Reverse Transmitter MODULE menu. From the MODULE menu, press the ALRM key to display the ALARMS menu.

The following table describes each transmitter alarm parameter.

Parameter	Meaning	Values	Possible Solutions to Alarm
InRF	RF input level	-4.5 dB to +3.0 dB	RF source or cables.
OutPwr	Optical output power	±0.5 dBm of nominal	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
CwMode	CW mode	Fault	CwMode set to On.
LasTemp	Laser temperature	20.0°C to 30.0°C	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
LasBias	Laser bias	50 mA to 100 mA	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
Enable	Laser on/off status	Fault	Check Enable and Master CONFIG settings.
PsOK	Bus voltage status	Fault	Module not fully seated. Check power supply.

Monitor Status Parameters Using the ICIM

Introduction

The STATUS menu on the ICIM allows you to verify the status of the transmitter.

Status Information

The following transmitter status information is available.

- Optical output power
- Laser bias current
- RF input level
- Module temperature
- Laser thermoelectric cooler current
- Laser temperature
- Laser on/off status
- Continuous wave mode operation
- Low RF alarm enabled/disabled
- Master or slave operation
- RF drive level

Continued on next page

Monitoring Status Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II 1310 nm Reverse Transmitter MODULE menu. From the MODULE menu, press the STAT key to display the STATUS menu.

The following table describes each transmitter status parameter.

Parameter	Units	Meaning
OutPwr	dBm	Optical output power
LasBias	mA	Laser bias current
InRF	dB	RF input level
ModTemp	°C	Module temperature
TecCur	mA	Laser thermoelectric cooler current
LasTemp	°C	Laser temperature
Enable	N/A	Laser on/off
CwMode	N/A	Continuous wave mode operation
LoRFInh	N/A	Low RF alarm enabled/disabled
Master	N/A	Master or slave operation
RFDrive	N/A	RF drive level

Configure Parameters Using the ICIM

Introduction

The CONFIG menu on the ICIM allows you to configure several transmitter parameters.

Configuring Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II 1310 nm Reverse Transmitter MODULE menu. From the MODULE menu, press the CFG key to display the CONFIG menu.

The following table shows the configurable parameters for the transmitter.

Parameter	Description	Values	Default
Enable	Enables or disables transmitter operation (turns the laser on or off).	• On • Off	On
CwMode	Automatically adjusts the displayed RF input level by subtracting 3.0 dB when CW mode is on. The RF high alarm is also disabled when CW mode is on.	• On • Off	Off
LoRFInh	Enables or disables the RF Input Low alarm.	• On • Off	On
Master	Configures the module as master or slave. • If set to **Master,** the transmitter is controlled *only* by the Enable control above. • If set to **Slave,** the transmitter is controlled by a combination of Enable and the external input CNT_IN_1.	• Master • Slave	Master
RFDrive	Sets the relative RF drive level into the transmitter.	-1.5 dB to +1.5 dB in 0.5 dB steps	0.0 dB

Monitor Alarm Parameters Using LCI

Introduction

The Local Craft Interface (LCI) software allows you to view alarms that may exist for the transmitter.

Alarm Information

The following transmitter alarm information is available:

- Laser temperature
- Laser bias current
- RF input level
- Optical output power
- Power supply status

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Major low
- Minor high
- Major high

Continued on next page

Monitoring Alarm Parameters

To monitor the alarms, navigate to the Module Details window of the Transmitter (in the LCI module tree). The alarms are shown under the **Parameters** and **Alarms** headings.

The following table describes each transmitter alarm parameter.

Parameter	Meaning	Values	Possible Solutions to Alarm
Laser Temperature	Laser temperature	20.0°C to 30.0°C	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
Laser Bias Current	Laser bias	50 mA to 100 mA	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
RF Input Power	RF input level	-4.5 dB to +3.0 dB	RF source or cables.
Optical Output Power	Optical output power	±0.5 dBm of nominal	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
Power Supply Status	Power supply status	Normal or Alarm	Module not fully seated. Check power supply.

Modify Alarm Limits Using LCI

Introduction

Using LCI, you can modify limits for several alarm parameters for the transmitter.

Modifying Alarm Parameters

Modifiable alarm parameters are located under the **Parameters** heading of the Transmitter Module Details window.

The following table shows parameters with alarm limits that can be modified.

Parameter	Meaning	Values
RF Input Power	RF input level	-4.5 to +3.0 dB
Optical Output Power	Optical output power	±0.5 dBm of nominal

Monitor Status Parameters Using LCI

Introduction

The LCI software allows you to verify the status of the transmitter.

Status Information

The following transmitter status information is available.

- Optical output power
- Laser bias current
- RF input level
- Module temperature
- Laser thermoelectric cooler current
- Laser temperature
- Laser on/off
- Continuous wave mode operation
- Low RF alarm enabled/disabled
- Master or slave operation
- RF drive level

Continued on next page

Monitoring Status Parameters

To monitor the parameters, navigate to the Module Details window of the transmitter (in the LCI module tree). The alarms are shown under the **Parameters** and **Status** headings.

The following table describes each transmitter status parameter.

Parameter	Units	Meaning
Optical Output Power	dBm	Optical output power
Laser Bias Current	mA	Laser bias current
RF Input Power	dB	RF input level
Module Temperature	°C	Module temperature
TEC Current	mA	Laser thermoelectric cooler current
Laser Temperature	°C	Laser temperature
RF Drive Setting	N/A	RF drive level
Enable Laser	N/A	Laser on/off
CW Mode Control	N/A	Continuous wave mode operation
Low RF Alarm Inhibit	N/A	Low RF alarm enabled/disabled
Master	N/A	Master or Slave operation

Configure Parameters Using LCI

Introduction

The LCI software allows you to configure several transmitter parameters.

Configuring Parameters

To configure the parameters, navigate to the Module Details window of the transmitter (in the LCI module tree). The parameters are shown under the **Controls** heading.

The following table shows the configurable parameters for the transmitter.

Parameter	Description	Values	Default
RF Drive Setting	Sets the relative RF drive level into the transmitter.	-1.5 dB to +1.5 dB in 0.5 dB steps	0.0 dB
Enable Laser	Enables or disables transmitter operation (turns the laser on or off)	• On = Enabled • Off = Disabled	Enabled
CW Mode Control	Automatically adjusts the displayed RF input level by subtracting 3.0 dB when CW mode is on. The RF high alarm is also disabled when CW mode is on.	• On • Off	Off
Low RF Alarm Inhibit	Enables or disables the RF Input Low alarm.	• On = Alarm enabled • Off = Alarm disabled	Enabled
Master	Configures the module as master or slave. • If set to **Master,** the transmitter is controlled *only* by the Enable control above. • If set to **Slave,** the transmitter is controlled by a combination of Enable and the external input CNT_IN_1.	• On = Master • Off = Slave	Master

General Troubleshooting Information

Introduction

The following information:

- Lists the equipment you might need to troubleshoot the transmitter
- Explains how to obtain troubleshooting assistance

Needed Equipment

You might need the following equipment to troubleshoot the transmitter:

- Digital voltmeter
- Fiber connector cleaning materials

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the transmitter, take note of the following warnings.

⚠ **WARNING:**

- **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
- **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The following troubleshooting information helps identify possible causes and solutions to transmitter alarm conditions.

Troubleshooting Alarms

If the red Alarm indicator is illuminated or blinking, check the ICIM display or the appropriate LCI screen to determine the cause of the alarm.

Refer to the following table for troubleshooting assistance.

Alarm	Range	Possible Solutions
InRF	-4.5 dB to +3.0 dB	RF source or cables.
OutPwr	±0.5 dBm of nominal	Internal problem. Telephone the Scientific-Atlanta assistance center in your area.
CWMode	Fault	CWMode set to On.
LasTemp	20.0°C to 30.0°C	Internal problem. Telephone the Scientific-Atlanta assistance center in your area.
LasBias	50 mA to 100 mA	Internal problem. Telephone the Scientific-Atlanta assistance center in your area.
Enable	Fault	Check Enable and Master CONFIG settings.
PsOK	Fault	Module not fully seated. Check power supply.

Transmitter Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the transmitter and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the transmitter with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record laser power level, laser temperature readings, laser bias current, or power supply voltages.

Large variations in any of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called "canned air")

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use "Kleenex-type" tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

Continued on next page

Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Section G
Prisma II 1550 nm Transmitters

Overview

Introduction

The information in this section applies to the following Prisma II 1550 nm Transmitters:

- Externally-Modulated Broadcast Transmitter
- Gap Bridger Externally-Modulated Broadcast Transmitter
- QAM Transmitter

In This Section

This section contains the following topics.

Monitor Alarm Parameters Using the ICIM

Introduction

The Intelligent Communications Interface Module (ICIM) in the Prisma II Chassis allows you to scroll through and view alarms that may exist for the transmitter.

Transmitter Status LED Description

The Alarm LED located on the transmitter's front panel illuminates or blinks to indicate the state of the transmitter.

The following table shows each possible transmitter state.

If the Alarm LED:	This Indicates:
Blinks	a minor alarm condition.
Illuminates	a critical alarm condition.

Alarm Information

The following transmitter alarm information is available:

- Laser bias
- Laser temperature
- Module temperature
- Modulator bias
- 2 GHz SBS power level
- 2 GHz SBS power level status
- Constant power loop status
- RF input power
- Optical output power
- Power supply
- Laser on/off
- Continuous wave (CW) mode
- -5 V power level
- -12 V power level
- +12 V power level

Note: Not all alarm parameters listed above apply to all 1550 nm Transmitters.

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Minor high
- Major low
- Major high

Continued on next page

Monitoring Alarm Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II 1550 nm Transmitter MODULE menu. From the MODULE menu, press the ALRM key to display the ALARMS menu.

The following table describes each transmitter alarm parameter.

Parameter	Meaning	Typical Range	Possible Solutions to Alarm
LasBias	Laser bias	50 to 100 mA	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
LasTemp	Laser temperature	20.0°C to 35.0°C	Check fan tray.
ModTemp	Module temperature	-40.0°C to 85.0°C	
ModBias	Modulator bias	-5 V to +5V	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
Psbs2GHz	2 GHz SBS power level	10 to 400	
PLLock	2 GHz SBS power level locked	• Lock • Unlock	
CPLock	Constant power loop locked	• Lock • Unlock	
InRF	RF input power	0 dB	Check RF source and cable.
OutPwr1	Optical output power	±0.5 dBm of nominal	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.

Continued on next page

Parameter	Meaning	Typical Range	Possible Solutions to Alarm
PsOk	Power supply	Fault	Check module seating and chassis power supply.
TxEnable	Laser off	• Enable • Disable	Laser disabled.
CwMode	Continuous wave mode	On	Continuous wave mode enabled.
-5VInt	-5 V power level	-5 V high or low	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
-12VInt	-12 V power level	-12 V high or low	
+12VInt	+12 V power level	+12 V high or low	

Monitor Status Parameters Using the ICIM

Introduction

The STATUS menu on the ICIM allows you to verify the status of the transmitter.

Status Information

The following transmitter status information is available.

- Optical output power
- Measured laser current
- Relative RF input power
- Module temperature
- Constant power loop status
- Measured TEC current
- Laser temperature
- Laser on/off
- Continuous wave mode
- Low RF input alarm status
- Modulator bias
- SBS PLL #1 status
- SBS PLL #2 status
- 2 GHz SBS power level
- 6 GHz SBS power level
- Internal –5 V power level
- Internal +12 V power level
- Internal –12 V power level
- Constant current
- Automatic gain control
- Master/slave operation
- RF drive level
- Link distance or span
- Optical modulation index

Note: Not all alarm parameters listed above apply to all 1550 nm Transmitters.

Continued on next page

Monitoring Status Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II 1550 nm Transmitter MODULE menu. From the MODULE menu, press the STAT key to display the STATUS menu.

The following table describes each transmitter status parameter.

Parameter	Units	Meaning	Typical Value
OutPwr1	dBm	Optical output power at port 1	+9.0 dBm
OutPwr2	dBm	Optical output power at port 2	+9.0 dBm
LasBias	mA	Measured laser current	270 mA
InRF	dB	Relative RF input power	0.0 dB
ModTemp	°C	Module temperature	Ambient °C + 15.0°
CPLock	N/A	Constant power loop locked	0.004 #
TecCur	A	Measured TEC current	0.2A
LasTemp	°C	Laser temperature	30.0°C
Enable	N/A	Laser on or off	On
CwMode	N/A	Continuous wave mode	Off
LoRFInh	N/A	Low RF input alarm status	Off
ModBias	V	Modulator bias	0.028 V
Sbs1Stat	N/A	SBS PLL #1 lock	Lock
Sbs2Stat	N/A	SBS PLL #2 lock	Lock
Psbs2G	N/A	2 GHz SBS power level	146.1
Psbs6G	N/A	6 GHz SBS power level	146.1
-5VInt	VN/A	Internal -5 V power level	-5 V
+12VInt	V	Internal +12 V power level	+12 V

Continued on next page

Parameter	Units	Meaning	Typical Value
-12VInt	V	Internal -12 V power level	-12 V
LasMode	N/A	Constant current	ConstCur
AGC	N/A	Automatic gain control	Off
Master	N/A	Master/slave operation	Master
RFDrive	dB	RF drive level	0 dB
Span	km	Link distance or span	35 km
OMISet	dB	Optical modulation index	0 dB

Configure Parameters Using the ICIM

Introduction

The CONFIG menu on the ICIM allows you to configure several transmitter parameters.

Configuring Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II 1550 nm Transmitter MODULE menu. From the MODULE menu, press the CFG key to display the CONFIG menu.

The following table shows the configurable parameters for the transmitter.

Parameter	Description	Values	Default
Enable	Enables or disables the laser.	• On • Off	On
LasMode	Selects laser operation mode to constant current or constant power.	• ConsCur • ConsPwr	ConsCur
AGC	Turns automatic gain control on or off.	• On • Off	Off
RFDrive	Sets the relative RF drive level into the transmitter. Only effective when AGC is off (i.e. manual gain control).	-6.0 dB to +1.0 dB in 0.5 dB steps	0.0 dB
OMISet	Sets the Optical Modulation Index level. Only effective when AGC is on.	-6.0 dB to +1.0 dB in 0.5 dB steps	0.0 dB
Master	Configures the module as master or slave. • If set to **Master,** the transmitter is controlled only by the Enable control above. • If set to **Slave,** the transmitter is controlled by a combination of Enable and the external input CNT_IN_1.	• Master • Slave	Master
Span	Optimizes transmitter performance based on the distance or span of the link.	0 km to 60 km in 5 km steps	35 km

Monitor Alarm Parameters Using LCI

Introduction

The Local Craft Interface (LCI) software allows you to view alarms that may exist for the transmitter.

Alarm Information

The following transmitter alarm information is available:

- Laser bias current
- Laser temperature
- Module temperature
- Modulator bias
- 2 GHz SBS power level
- 6 GHz SBS power level
- RF input
- Output power
- -5 V power level
- -12 V power level
- +12 V power level
- Power supply status
- Laser enabled status
- SBS 2 GHz PLL
- SBS 6 GHz PLL
- Constant power loop status

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Major low
- Minor high
- Major high

Continued on next page

Monitoring Alarm Parameters

To monitor the alarms, navigate to the Module Details window of the transmitter (in the LCI module tree). The alarms are shown under the **Parameters** and **Alarms** headings.

The following table describes each transmitter alarm parameter.

<table>
<tr><th>Parameter</th><th>Typical Range</th><th>Possible Solutions to Alarm</th></tr>
<tr><td>Laser Bias</td><td>50 to 100 mA</td><td>Internal problem.
Telephone the Scientific-Atlanta assistance center in your area for assistance.</td></tr>
<tr><td>Laser Temperature</td><td>20.0°C to 35.0°C</td><td rowspan="2">Check fan tray.</td></tr>
<tr><td>Module Temperature</td><td>-40.0°C to 85.0°C</td></tr>
<tr><td>Modulator Bias</td><td>-5 V to +5V</td><td rowspan="3">Internal problem.
Telephone the Scientific-Atlanta assistance center in your area for assistance.</td></tr>
<tr><td>2 GHz SBS Power</td><td>10 to 400</td></tr>
<tr><td>6 GHz SBS Power</td><td>10 to 400</td></tr>
<tr><td>RF Input</td><td>0.0 dB</td><td>Check RF source and cable.</td></tr>
<tr><td>Output Power</td><td>±0.5 dBm of nominal</td><td rowspan="4">Internal problem.
Telephone the Scientific-Atlanta assistance center in your area for assistance.</td></tr>
<tr><td>-5V Supply Voltage</td><td>-5 V high or low</td></tr>
<tr><td>-12V Supply Voltage</td><td>-12 V high or low</td></tr>
<tr><td>+12V Supply Voltage</td><td>+12 V high or low</td></tr>
<tr><td>Power Supply Status</td><td>Fault</td><td>Check module seating and chassis power supply.</td></tr>
</table>

Continued on next page

Parameter	Typical Range	Possible Solutions to Alarm
Laser Enabled Status	• Enable • Disable	Laser disabled.
SBS 2 GHz PLL	• Lock • Unlock	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.
SBS 6 GHz PLL		
Constant Power Loop Locked		

Modify Alarm Limits Using LCI

Introduction

Using LCI, you can modify limits for several alarm parameters for the transmitter.

Modifying Alarm Parameters

Modifiable alarm parameters are located under the **Parameters** heading of the Transmitter Module Details window.

The following table shows parameters with alarm limits that can be modified.

Parameter	Typical Range
Laser Bias	50 to 100 mA
Laser Temperature	20.0°C to 30.0°C
Module temperature	-40.0°C to +65.0°C
RF input level	Enabled
Modulator bias	-5 V to +5V
SBS 2 GHz Power	10 to 400
SBS 6 GHz Power	10 to 400
RF Input	0 dB
Optical Output Power	±0.5 dBm of nominal
Output Power	±0.5 dBm of nominal
-5V Supply Voltage	-5 V high or low
-12V Supply Voltage	-12 V high or low
+12V Supply Voltage	+12 V high or low

Monitor Status Parameters Using LCI

Introduction

The LCI software allows you to verify the status of the transmitter.

Status Information

The following transmitter status information is available.

- RF input power
- Optical output power
- Module temperature
- Laser temperature
- Measured TEC current
- Measured laser current
- Lock detect (SBS 2 GHz and 6 GHz PLL)
- Internal –5 V power level
- Internal –12 V power level
- Internal +12 V power level

Continued on next page

Monitoring Status Parameters

To monitor the parameters, navigate to the Module Details window of the Transmitter (in the LCI module tree). The alarms are shown under the **Parameters** and **Status** headings.

The following table describes each transmitter status parameter.

Parameter	Units	Meaning	Typical Value
RF Input	dB	Relative RF input power	0 dB
Output Power 1	dBm	Optical output power at port 1	+9.0 dBm
Output Power 2	dBm	Optical output power at port 2	+9.0 dBm
Module Temperature	°C	Module temperature	Ambient °C + 15.0°
Laser Temperature	°C	Laser temperature	30.0°C
TEC Current	A	Measured TEC current	0.2A
Laser Bias	mA	Measured laser current	270 mA
SBS 2GHz Power	N/A	Lock detect, SBS 2GHz PLL	Lock
SBS 6GHz Power	N/A	Lock detect, SBS 6GHz PLL	Lock
-5V Supply Voltage	VN/A	Internal -5 V power level	-5 V
-12V Supply Voltage	V	Internal -12 V power level	-12 V
+12V Supply Voltage	V	Internal +12 V power level	+12 V

Configure Parameters Using LCI

Introduction

The LCI software allows you to configure several transmitter parameters.

Configuring Parameters

To configure the parameters, navigate to the Module Details window of the Transmitter (in the LCI module tree). The parameters are shown under the **Controls** heading.

The following table shows the configurable parameters for the transmitter.

Parameter	Description	Values	Default
Enable Laser	Enables or disables transmitter operation (turns the laser on or off)	• On = Enabled • Off = Disabled	Enabled
Laser Mode	Selects laser operation mode to constant current (i.e., constant wavelength) or constant power.	• Constant-Current • Constant-Power	Constant-Current
Gain Control Mode	Selects constant gain or automatic gain control (AGC).	• Constant-Gain • AGC	Constant-Gain
RF Drive Setting	Sets the relative RF drive level into the transmitter. Only effective when Gain Control Mode is set to **AGC.**	-6.0 dB to +1.0 dB in 0.5 dB steps	0.0 dB
OMI Level Setting	Sets the Optical Modulation Index level. Only effective when Gain Control Mode is set to **Constant-Gain.**	-6.0 dB to +1.0 dB in 0.5 dB steps	0.0 dB
Master	Configures the module as master or slave. • If set to **Master,** the transmitter is controlled by the Enable control. • If set to **Slave,** the transmitter is controlled by a combination of Enable and the external input CNT_IN_1.	• On = Master • Off = Slave	Master
Span	Optimizes transmitter performance based on the distance or span of the link.	0 km to 60 km in 5 km steps	35 km

General Troubleshooting Information

Introduction

The following information:

- Lists the equipment you might need to troubleshoot the transmitter
- Explains how to obtain troubleshooting assistance

Needed Equipment

You might need the following equipment to troubleshoot the transmitter:

- Digital voltmeter
- Fiber connector cleaning materials

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the transmitter, take note of the following warnings.

WARNING:

- **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
- **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The following troubleshooting information helps identify possible causes and solutions to transmitter alarm conditions.

Troubleshooting Alarms

If the red Alarm indicator is illuminated or blinking, check the ICIM display or the appropriate LCI screen to determine the cause of the alarm.

Refer to the following table for troubleshooting assistance.

<table>
<tr><th>Parameter</th><th>Typical Range</th><th>Possible Solutions</th></tr>
<tr><td>Laser Bias</td><td>50 to 100 mA</td><td>Internal problem.
Telephone the Scientific-Atlanta assistance center in your area for assistance.</td></tr>
<tr><td>Laser Temperature</td><td>20.0°C to 35.0°C</td><td rowspan="2">Check fan tray.</td></tr>
<tr><td>Module Temperature</td><td>-40.0°C to 85.0°C</td></tr>
<tr><td>Modulator Bias</td><td>-5 V to +5V</td><td rowspan="3">Internal problem.
Telephone the Scientific-Atlanta assistance center in your area for assistance.</td></tr>
<tr><td>2 GHz SBS Power</td><td>10 to 400</td></tr>
<tr><td>6 GHz SBS Power</td><td>10 to 400</td></tr>
<tr><td>RF Input</td><td>0.0 dB</td><td>Check RF source and cable.</td></tr>
<tr><td>Output Power</td><td>±0.5 dBm of nominal</td><td rowspan="4">Internal problem.
Telephone the Scientific-Atlanta assistance center in your area for assistance.</td></tr>
<tr><td>-5V Supply Voltage</td><td>-5 V high or low</td></tr>
<tr><td>-12V Supply Voltage</td><td>-12 V high or low</td></tr>
<tr><td>+12V Supply Voltage</td><td>+12 V high or low</td></tr>
<tr><td>Power Supply Status</td><td>Fault</td><td>Check module seating and chassis power supply.</td></tr>
<tr><td>Laser Enabled Status</td><td>• Enable
• Disable</td><td>Laser disabled.</td></tr>
<tr><td>SBS 2 GHz PLL</td><td rowspan="3">• Lock
• Unlock</td><td rowspan="3">Internal problem.
Telephone the Scientific-Atlanta assistance center in your area for assistance.</td></tr>
<tr><td>SBS 6 GHz PLL</td></tr>
<tr><td>Constant Power Loop Locked</td></tr>
</table>

Transmitter Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the transmitter and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the transmitter with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record laser power level, laser temperature readings, laser bias current, or power supply voltages.

Large variations in any of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called "canned air")

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use "Kleenex-type" tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

Continued on next page

Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Chapter 2
Receivers

Overview

Introduction

This chapter provides information to assist you in maintaining and troubleshooting Prisma® and Prisma II™ Receivers.

Qualified Personnel

Only appropriately qualified and trained personnel should attempt to maintain or troubleshoot the receivers described in this chapter.

⚠ **WARNING:**

Allow only qualified personnel to maintain or troubleshoot these receivers. Otherwise, personal injury or equipment damage may occur.

In This Chapter

This chapter contains the following topics.

Section A
Prisma Model 6971-SF Single Forward Receiver

Overview

Introduction

The information in this section applies to the Prisma Model 6971-SF Single Forward Receiver.

In This Section

This section contains the following topics.

Monitor Alarm Parameters

Introduction

From the ALARMS screen on the receiver, you can determine whether there is a receiver alarm condition and, if there is an alarm condition, the cause of the alarm.

If an alarm condition:

- Is present, the cause of the condition displays on the screen. Items that are not in the alarm state are passed over and are not displayed.
- Is not present, the message **No Alarms** displays on the screen.

Alarm Information

The following receiver alarm information is available:

- Software self test
- Optical power
- Module temperature
- +5 V DC analog power level
- +5 V analog power level
- -5 V DC digital power level
- +15 V DC power level
- +24 V DC backplane power level
- Backplane power supply status (primary and secondary)

Continued on next page

ALARMS Screen Description

The ALARMS screens let you quickly determine the cause of an alarm. When an ALARMS screen is active, press the Select key on the receiver to rotate through the active alarms.

Each screen also displays the current parameter. If no alarm is active for a particular parameter, the module does not display that screen.

The following table shows the values displayed on the ALARMS screen for out-of-range errors or a failure.

ALARMS Screen Value	Description
OK	Component is operational or passes test (for parameters without an operating range).
HIGH	The measured level is above the operating range.
LOW	The measured level is below the operating range.
FAIL	Component, test, or signal failure (for parameters without an operating range).

Continued on next page

Monitoring Alarm Parameters

The following table describes each alarm parameter.

Parameter	Meaning	Values	Fault Indicator
No Alarms	No alarms exist	OK	Off
Self Test	Software self test	OK	Off
		FAILED	Illuminates
Popt	Optical power	HIGH	Illuminates
		LOW	Illuminates
MTemp	Module temperature	HIGH: Above 80°C	Blinks
		LOW: Below 80°C	Off
A5Vdc	+5 V DC analog power level	HIGH: Above 5.50 V	Illuminates
		LOW: Below 4.50 V	Illuminates
A5Vdc	+5 V analog power level	HIGH: Above 5.50 V	Illuminates
		LOW: Below 4.50 V	Illuminates
-5Vdc	-5 V DC digital power level	High: Above -5.50 V	Illuminates
		LOW: Below -4.50 V	Illuminates
15Vdc	+15 V DC control card power level	HIGH: Above 16.50 V	Illuminates
		LOW: Below 13.50 V	Illuminates
24Vdc	+24 V DC backplane power level	HIGH: Above 26.40 V	Illuminates
		LOW: Below 22.60 V	Illuminates
PSPri	Primary backplane power supply status	OK	Off
		FAIL	Blinks
PSsec	Secondary backplane power supply status	OK	Off
		FAIL	Blinks

Monitor Status Parameters

Introduction

From the STATUS screen on the receiver, you can check various parameters to verify the status of the receiver.

Status Information

The following receiver status information is available:

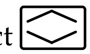
- Received optical power level
- Module SMC ID
- Received optical power status
- Received optical power level
- Hybrid current status
- Hybrid current
- RF attenuation
- Optical wavelength
- Nominal input power
- Threshold value
- Module temperature
- +5 V digital power level
- +5 V analog power level
- -5 V backplane power level
- +15 V control card power level
- +24 V backplane power level
- Backplane power supply status (primary and secondary)

Continued on next page

STATUS Screen Description

The first STATUS screen is called the Summary STATUS screen, and it provides the following receiver information:

- Received optical power level in dBm
- SMC ID of the receiver

When in the summary STATUS screen, press the Select  key on the receiver to rotate through the remaining parameters.

Each parameter has its own STATUS screen that displays the following information:

- The parameter being monitored
- The measured level of the parameter being monitored
- A FAIL indication for parameters without an operating range that are not working
- Assessment of the measured level, against the level required for normal operation, for items without an operating range

The following table shows the assessments that can be displayed for each measured item.

STATUS Screen Value	Description
OK	The measured level is within the range for normal operation.
HIGH	The measured level is above the range for normal operation.
LOW	The measured level is below the range for normal operation.
FAIL	Component, test, or signal failure (for parameters without an operating range).

Continued on next page

Monitoring Status Parameters

The following table describes each status parameter.

Parameter	Meaning	Operating Range
Summary STATUS Screen:		
• Popt	Received optical power level	-3.0 dBm to +3.0 dBm
• ID	SMC ID of the module	Programmable 0001 to 65,535, except 9999
Popt	Received optical power status	OK, HIGH or LOW
	Received optical power level	-3.0 dBm to +3.0 dBm
Inhbd	Hybrid current status	OK, HIGH or LOW
	Hybrid current	Current in mA
Attn	RF attenuation	0.0 dB to 10.0 dB
WvLen	Optical wavelength	1550 nm or 1310 nm
InPwr	Nominal input power	-3.0 dBm to +3.0 dBm
THold	Threshold value	0.0 dB to 3.0 dB
Mtemp	Module temperature	OK or HIGH
		0.0ºC to 108.0ºC
D5Vdc	+5 V digital power level	OK, HIGH or LOW
		0 V DC to +10.81 V DC
A5Vdc	+5 V analog power level	OK, HIGH or LOW
		0 V DC to +10.81 V DC

Continued on next page

Parameter	Meaning	Values
-5Vdc	-5 V backplane power level	OK, HIGH or LOW
		0 V DC to +9.8 V DC
15Vdc	+15 V control card power level	OK, HIGH or LOW
		0 V DC to +32.42 V DC
24Vdc	+24 V backplane power level	OK, HIGH or LOW
		0 V DC to +51.43 V DC
PsPri	Primary backplane power supply status	OK or FAIL
PsSec	Secondary backplane power supply status	OK or FAIL

General Troubleshooting Information

Introduction

The following information:

- Lists the equipment you might need to troubleshoot the receiver
- Explains how to obtain troubleshooting assistance

Needed Equipment

You might need the following equipment to troubleshoot the receiver:

- Digital voltmeter
- Spectrum analyzer

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the receiver, take note of the following warnings.

> ⚠ **WARNING:**
>
> - **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
> - **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The information in this section provides possible solutions to the following types of alarm conditions:

- Connections and loss of power
- Receiver
- Power supply

Troubleshooting Connections and Loss of Power

If the RX FAULT indicator is off, refer to the following table to restore power.

Alarm Condition	Possible Causes	Possible Solutions
RX FAULT indicator is off.	The power supply connection may be loose.	Verify that all power supply connections are secure.
	The receiver may not be completely seated in chassis.	Verify that the receiver is securely connected to the chassis.
	No power is present.	Check the AC power at the receptacle, if applicable.
	The indicators may be burned out.	Contact Scientific-Atlanta for repair. For instructions, refer to Chapter 6**, Customer Information.**

Continued on next page

Troubleshooting Receiver Alarms

The following table shows the possible causes of receiver alarms and their solutions.

Alarm Condition	Status	Possible Causes	Possible Solutions
Software Self Test	OK	No alarms.	No action required.
	FAIL	One or more power supply voltages are out of specification.	Refer to **Troubleshooting Power Supply Alarms** later in this section.
		Optical input level is out of specification.	Verify the input power level is within specification.
Received Optical power	High or Low	Optical power level at the input of the receiver is out of specification.	Verify the input power level is within specification.
		The nominal and/or threshold values are not set properly.	Verify that the nominal and threshold values are set correctly.
Hybrid Current Draw	High or Low	Hybrid failure.	Contact Scientific-Atlanta for hybrid replacement. For instructions, refer to Chapter 6**, Customer Information.**
Module Temperature	Mtemp High	Ambient temperature is too high due to: • A failure in the temperature control system. • Airflow through the rack has been restricted or cut off. • Prisma chassis cooling fans are not operating properly.	Diagnose the problem and repair or replace as needed. Ensure the airflow system has not been damaged or removed. Repair or replace as needed. Refer to the *Prisma Model 6470-R2 Chassis Installation and Operation Guide*, part number 570107, to troubleshoot the chassis cooling fans.

Continued on next page

Troubleshooting Power Supply Alarms

The following table shows the possible causes of power supply alarms and their solutions.

Note: Some or all of the steps will cause a service interruption.

Alarm	Status	Possible Causes	Possible Solutions
• +5 V DC Analog Power • +5 V DC Digital Power • -5 V DC Digital Power • +15 V DC Digital Power • +24 V DC Digital Power	High or Low	Loose, unplugged, or damaged power cords.	Check the power supply power cord and connections.
		A blown fuse on the power supply.	Check the power supply fuse. Repair or replace as needed.
		A faulty power supply module.	Verify proper power supply module operation. Repair or replace as needed.
		The receiver is not seated properly in the chassis.	Verify that the receiver is securely connected to the chassis.
		Damage to the chassis or module backplane connector.	Verify that there is no visible damage to the connector.
		• A faulty receiver module. • No AC at receptacle	Are any other units in this chassis having the same problem? • If **no,** the receiver may be faulty and should be replaced. • If **yes,** the chassis may have a problem. For help, telephone the Scientific-Atlanta assistance center in your area.

Continued on next page

Alarm	Status	Possible Causes	Possible Solutions
Backplane Power Supply Status (Primary and Secondary)	PSPri or PSsec Fail	The power supply status is: • Reported as in alarm • Not reported at all	Verify the operation of the power supplies. If they are functioning properly and no power supply related alarms are reported on any module in the chassis, the chassis may have a problem. For help, telephone the Scientific-Atlanta assistance center in your area.

Receiver Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the receiver and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the receiver with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record the optical input level, RF output readings, frame error status, or power supply voltages.

Large variations in any of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called "canned air")

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use "Kleenex-type" tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

Continued on next page

Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Section B
Prisma Model 6971-HP High Power Receiver

Overview

Introduction

The information in this section applies to the Prisma Model 6971-HP High Power Receiver.

In This Section

This section contains the following topics.

Monitor Alarm Parameters

Introduction

From the ALARMS screen on the receiver, you can determine whether there is a receiver alarm condition and, if there is an alarm condition, the cause of the alarm.

If an alarm condition:

- Is present, the cause of the condition displays on the screen. Items that are not in the alarm state are passed over and are not displayed.
- Is not present, the message **No Alarms** displays on the screen.

Alarm Information

The following receiver alarm information is available:

- Software self test
- Received optical power
- Hybrid current draw
- Module temperature
- +5 V DC digital power level
- +5 V DC analog power level
- -5 V DC analog power level
- +15 V DC control card power level
- +24 V analog DC power level
- Backplane power supply status (primary and secondary)

ALARMS Screen Description

The ALARMS screens let you quickly determine the cause of an alarm. When an ALARMS screen is active, press the Select key on the receiver to rotate through the active alarms.

Each screen also displays the current parameter. If no alarm is active for a particular parameter, the module does not display that screen.

ALARMS Screen Value	Description
OK	Component is operational or passes test (for parameters without an operating range).
HIGH	The measured level is above the operating range.
LOW	The measured level is below the operating range.
FAIL	Component, test, or signal failure (for parameters without an operating range).

Continued on next page

Alarm Parameters

The following table describes each alarm parameter.

Parameter	Meaning	Description
No Alarms	No alarms	No alarms are active.
Self Test	Self test	Software self test failed.
POpt	Received optical power	Input optical power is outside the required range.
Ihybd	Hybrid current draw	The amount of current drawn by the hybrid RF amplifier. Low or high hybrid current indicates a possible hybrid failure, requiring the amplifier to be repaired. Contact Scientific-Atlanta for hybrid repair. For instructions, refer to Chapter 6**, Customer Information.**
Mtemp	Module temperature	Module temperature is outside the normal operating range.
D5Vdc	+5 V DC digital power level	The +5 V DC power level for digital circuitry is outside the normal range.
A5Vdc	+5 V DC analog power level	The +5 V DC power level for analog circuitry is outside the normal range.
-5Vdc	-5 V DC analog power level	The -5 V DC power level is outside the normal range.
15Vdc	+15 V DC control card power level	The +15 V DC control card power level is outside the normal range.
24Vdc	+24 V DC analog power level	The +24 V DC power level is outside the normal range.
PSpri	Power supply	The primary backplane power supply status.
PSsec	Power supply	The secondary backplane power supply status.

Monitor Status Parameters

Introduction

While viewing the STATUS screen on the receiver, you can press the Select key on the receiver to check various parameters.

Status Information

The following receiver status information is available:

- Received optical power
- Hybrid current draw
- Module temperature
- +5 V DC digital power level
- +5 V DC analog power level
- -5 V DC backplane power level
- +15 V DC control card power level
- +24 V analog DC power level
- Backplane power supply status (primary and secondary)

Continued on next page

Status Parameters

The following table describes each status parameter.

Parameter	Meaning	Description
POpt	Received optical power	Input optical power ID, status, and power level.
Ihybd	Hybrid current draw	Low or high hybrid current indicates a possible hybrid failure, requiring the amplifier to be repaired. Contact Scientific-Atlanta for hybrid repair. For instructions, refer to Chapter 6, **Customer Information.**
LoPwr	Low optical input	Optical input is out of nominal input range.
HiPwr	High optical input	Optical input is out of nominal input range.
Mtemp	Module temperature	Module temperature in degrees Celsius
D5Vdc	+5 V DC digital power level	+5 V DC supply for digital circuitry status
A5Vdc	+5 V DC analog power level	+5 V DC supply for analog circuitry status
-5Vdc	-5 V DC backplane power level	-5 V DC power status
15Vdc	+15 V DC control card power level	+15 V DC control card status
24Vdc	+24 V DC analog power level	+24 V DC power status
PSpri	Power supply	Primary backplane power supply status
PSsec	Power supply	Secondary backplane power supply status

Receiver Specifications

Introduction

The specifications listed in the following tables can be useful when troubleshooting the receivers.

Power Requirements

Parameter	Values
Voltage	• -5, +5, and +24 V DC • Model 6470-R2 Chassis
Power	Maximum: 15 watts
Current	Maximum: • -5 V DC: 10 mA • +5 V DC: 235 mA • +24 V DC: 565 mA

Environmental Specifications

Parameter	Values
Operating temperature	0.0°C to +40.0°C
Storage temperature	-40.0°C to +70.0°C
Humidity	Maximum: 85%, non-condensing

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Optical Specifications

Parameter	Values
Bandwidth	50–870 MHz
Frequency response	± 1.0 dB
Return loss, RF ports	• ≥ 16 dB (50–550 MHz) • ≥ 16–3f_{GHZ} dB (f > 550 MHz)
Wavelength	• 1290–1330 nm • 1530–1570 nm
Responsivity	• 1310 nm: 0.75 A/W minimum • 1550 nm: 0.90 A/W minimum
Fiber type	Single mode, 9/125 µm

Electrical Specifications

Parameter	Values
CSO	-70.0 dBc at +3.0 dB opt. input
RF output/channel	• 1310 nm: 34 dBmV minimum • 1550 nm: 35 dBmV minimum (measured at 3% OMI/channel)
RF output impedance	75 Ω
Noise equivalent power	7.0 pA/√Hz (7.5 pA/√Hz maximum)

General Troubleshooting Information

Introduction

If you experience a receiver alarm condition, verify that the receiver is properly seated. If the condition persists, contact a Scientific-Atlanta assistance center in your area.

Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the receivers, take note of the following warnings.

> ⚠ **WARNING:**
>
> - **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
> - **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Receiver Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the receiver and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the receiver with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record the optical input level, RF output readings, frame error status, or power supply voltages.

Large variations in any of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called "canned air")

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use "Kleenex-type" tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

Continued on next page

Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Section C
Prisma Model 6971-DR Dual Reverse Receiver

Overview

Introduction

The information in this section applies to the Prisma Model 6971-DR Dual Reverse Receiver.

In This Section

This section contains the following topics.

Monitor Alarm Parameters

Introduction

From the ALARMS screen on the receiver, you can determine whether there is a receiver alarm condition and, if there is an alarm condition, the cause of the alarm.

If an alarm condition:

- Is present, the cause of the condition displays on the screen. Items that are not in the alarm state are passed over and are not displayed.
- Is not present, the message **No Alarms** displays on the screen.

Alarm Information

The following receiver alarm information is available:

- Software self test
- Received optical power
- Module temperature
- +5 V DC analog power level
- +5 V DC digital power level
- -5 V DC power level
- +15 V DC power level
- +24 V DC power level
- Power supply status (primary and secondary)

Continued on next page

ALARMS Screen Description

The ALARMS screens let you quickly determine the cause of an alarm. When an ALARMS screen is active, press the Select key on the receiver to rotate through the active alarms.

Each screen also displays the current parameter. If no alarm is active for a particular parameter, the module does not display that screen.

Alarm Parameters

The following table describes each alarm parameter.

Parameter	Meaning	Values
No Alarms	No alarms exist	N/A
Self Test	Software self test	OK
		FAILED
Popt1	Received optical power on RX 1	HIGH: Above 0.0 dBm
		LOW: Below -17.0 dBm
Popt2	Received optical power on RX 2	HIGH: Above 0.0 dBm
		LOW: Below -17.0 dBm
MTemp	Module temperature	HIGH: Above 40.0°C
		LOW: Below 0.0°C
A5Vdc	+5 V DC analog power level	HIGH: Above 5.50 V
		LOW: Below 4.50 V
D5Vdc	+5 V DC digital power level	HIGH: Above 5.25 V
		LOW: Below 4.75 V
-5Vdc	-5 V DC power level	HIGH: Above -5.50 V
		LOW: Below -4.50 V

Continued on next page

<table>
<tr><th>Parameter</th><th>Meaning</th><th>Values</th></tr>
<tr><td rowspan="2">15Vdc</td><td rowspan="2">+15 V DC power level</td><td>HIGH: Above 16.50 V</td></tr>
<tr><td>LOW: Below 13.50 V</td></tr>
<tr><td rowspan="2">24Vdc</td><td rowspan="2">+24 V DC power level</td><td>HIGH: Above 25.20 V</td></tr>
<tr><td>LOW: Below 22.80 V</td></tr>
<tr><td rowspan="2">• PSPri
• PsSec</td><td rowspan="2">Primary and secondary power supplies.

Note: If only one power supply fails, the ALARMS screen displays OK for the other power supply. One power supply is adequate to power a fully loaded chassis.</td><td>OK</td></tr>
<tr><td>FAIL</td></tr>
</table>

Monitor Status Parameters

Introduction

From the STATUS screen on the receiver, you can check various parameters to verify the status of the receiver.

Status Information

The following receiver status information is available:

- Received optical power level
- Receiver gain
- Relative RF output level
- Path status (non-backup mode)
- Path status (backup mode)
- Wavelength
- Module temperature
- +5 V DC digital power level
- +5 V DC analog power level
- -5 V DC power level
- +15 V DC power level
- +24 V DC power level
- Backplane power supply status (primary and secondary)

Continued on next page

STATUS Screen Description

The first STATUS screen is called the Summary STATUS screen, and it provides the following receiver information:

- Received optical power level in dBm for RX 1 and RX 2
- SMC ID of the receiver

When in the summary STATUS screen, press the Select key on the receiver to rotate through the remaining parameters.

Each parameter has its own STATUS screen that displays the following information:

- The parameter being monitored
- The measured level of the parameter being monitored
- A FAIL indication for parameters without an operating range that are not working
- Assessment of the measured level, against the level required for normal operation, for items without an operating range

The following table shows the assessments that can be displayed for each measured item.

STATUS Screen Value	Description
OK	The measured level is within the range for normal operation.
HIGH	The measured level is above the range for normal operation.
LOW	The measured level is below the range for normal operation.
FAIL	Component, test, or signal failure (for parameters without an operating range).

Continued on next page

Monitoring Status Parameters

The following table describes each status parameter.

Parameter	Meaning	Values
Summary STATUS Screen:		
• POpt1	Received optical power for RX 1	-3.0 dBm to +3.0 dBm
• POpt2	Received optical power for RX 2	-3.0 dBm to +3.0 dBm
• ID	SMC ID of the module	0000 to 65,535
POpt1	Received optical power status for RX 1.	OK, HIGH or LOW
	Received optical power level for RX 1.	-17.0 dBm to 0.0 dBm
POpt2	Received optical power status for RX 2.	OK, HIGH or LOW
	Received optical power level for RX 2.	-17.0 dBm to 0.0 dBm
• Gain1 • Gain2	Receiver gain state for RX 1 and RX 2.	HIGH (if receiver is set for high gain)
		LOW (if receiver is not set for high gain)
• ROut1 • ROut2	Relative RF output level for RX 1 and RX 2.	Output level displayed as a percentage. • 0% indicates 20.0 dB attenuation • 100% indicates no attenuation
Path	Receiver path status (non-backup mode)	SNGL Single receiver mode. RX 2 acts as a hot backup for RX 1.
		DUAL Dual receiver mode. RX 1 and RX 2 function independently of each other

Continued on next page

Monitor Status Parameters, Continued

Parameter	Meaning	Values
Path B/UP	Receiver path status (backup mode)	Popt1 LOW RX 1 has a low optical power level (-3.0 dB from nominal).
		External The external backup signal is active.
		SMC CTRL The SMC Set Control Byte command has temporarily placed the receiver in backup mode.
		Unknown Cause for backup mode cannot be determined.
• WvLn1 • WvLn2	Configured wavelength for RX 1 and RX 2.	• 1310 nm • 1550 nm
Mtemp	Module temperature	OK or HIGH
D5Vdc	+5 V DC digital power level	OK, HIGH, or LOW
A5Vdc	+5 V DC analog power level	OK, HIGH, or LOW
-5Vdc	-5 V DC power level	OK, HIGH, or LOW
15Vdc	+15 V DC power level	OK, HIGH, or LOW
24Vdc	+24 V DC power level	OK, HIGH, or LOW
PsPri	Primary power supply	OK or FAIL
PsSec	Secondary power supply	OK or FAIL

Receiver Specifications

Introduction

The specifications listed in the following tables can be useful when troubleshooting the receivers.

Environmental Specifications

Parameter	Values
Temperature range	Operational: 0.0°C to 40.0°C Nominal: 20.0°C to 30.0°C
Humidity	95%, non-condensing

Optical Specifications

Parameter	Values
Number of inputs	2
Optical connector	• SC ultra-polish (standard) • FC ultra-polish (optional)
Optical input wavelength	• 1310 nm, ± 30 nm • 1550 nm, ± 40 nm
Return loss	-50.0 dB

Continued on next page

RF Output Specifications

Notes:

- RF output level is specified for video carrier level with –17.0 dBm received optical power, 15 percent modulation index per channel, and four NTSC CW carriers.
- CNR, CSO, and CTB are referenced to a video carrier level. Measured with –3.0 dBm received optical power, 4 percent modulation index per channel, four NTSC CW carriers, and 512 QPSK channels.

Parameter	Values
Number of outputs	2
Frequency range	5–200 MHz
Output impedance	75 Ω, unbalanced
RF output level	20.0 dBmV
Output return loss	Minimum: 14.0 dB
CNR	Minimum: 50.0 dB
CSO	Minimum: 58.0 dB
CTB	Minimum: 63.0 dB

General Troubleshooting Information

Introduction

If you experience a receiver alarm condition, verify that the receiver is properly seated. If the condition persists, contact a Scientific-Atlanta assistance center in your area.

Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the receivers, take note of the following warnings.

⚠ **WARNING:**

- **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
- **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Receiver Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the receiver and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the receiver with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record the optical input level, RF output readings, frame error status, or power supply voltages.

Large variations in any of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called "canned air")

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use "Kleenex-type" tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

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Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Section D
Prisma II Forward Receiver

Overview

Introduction

The information in this section applies to the Prisma II Forward Receiver.

In This Section

This section contains the following topics.

Monitor Alarm Parameters Using the ICIM

Introduction

The Intelligent Communications Interface Module (ICIM) in the Prisma II Chassis allows you to scroll through and view alarms that may exist for the receiver.

Receiver Alarm LED Description

The Alarm LED located on the receiver's front panel illuminates or blinks to indicate the state of the receiver.

The following table shows each possible receiver state.

If the Alarm LED:	This Indicates:
Blinks	a minor alarm condition.
Illuminates	a critical alarm condition.

Alarm Information

The following receiver alarm information is available:

- Optical power level
- Maximum optical input power
- Hybrid current
- Module temperature
- Receiver enabled/disabled
- Bus status

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Major low
- Minor high
- Major high

Continued on next page

Monitoring Alarm Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Forward Receiver MODULE menu. From the MODULE menu, press the ALRM key to display the ALARMS menu.

The following table describes each receiver alarm parameter.

Parameter	Meaning	Alarm Condition	Type	Typical Range
InPwr	Optical power level	Optical power = > 1.5 dBm or < -1.5 dBm	Minor	-20.0 dBm to 6.0 dBm
		Optical power = > 2.0 dBm, < -2.0 dBm	Major	
MaxInPwr	Maximum optical input power	Optical input > 6.0 dBm	Major	± 0.5 dBm of nominal
HybdCur	Hybrid current	Current = > .450 A or < .150 A	Minor	.150 A to .450 A
		Current = > .500 A or < .050 A	Major	.050 A to .500 A
ModTemp	Module temperature	Module temp exceeds –40.0°C to 90.0°C	Major	–40.0°C to 90.0°C
Enable	Receiver enabled or disabled	Unit disabled by user	Major	Enabled/disabled
PsOk	Bus status	Bus fault	Major	OK or Bus Fault

Alarm Threshold Values

Alarm threshold is the value at which an alarm is triggered. The alarm threshold data for this module is shown below.

Parameter	Minor Low Limit	Minor High Limit	Major Low Limit	Major High Limit	Hysteresis
InPwr	-1.5 dBm	1.5 dBm	-2.0 dBm	2.0 dBm	1.0 dBm
MaxInPwr	N/A	N/A	N/A	N/A	N/A
HybdCur	.150 A	.450 A	.050 A	.500 A	.001 A
ModTemp	-20.0°C	80.0°C	-40.0°C	90.0°C	0°C
Enable	N/A	N/A	N/A	N/A	N/A
PsOk	N/A	N/A	N/A	N/A	N/A

Monitor Status Parameters Using the ICIM

Introduction

The STATUS menu on the ICIM allows you to verify the status of the receiver.

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Forward Receiver MODULE menu. From the MODULE menu, press the **STAT** key to display the STATUS menu.

Status Information

The following receiver status information is available.

- Optical power level
- Hybrid current
- Module temperature
- Receiver enabled/disabled
- Master/Slave mode
- Receiver wavelength
- Nominal input power level

Continued on next page

Monitoring Status Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Forward Receiver MODULE menu. From the MODULE menu, press the **STAT** key to display the STATUS menu.

The following table describes each receiver status parameter.

Parameter	Units	Meaning
InPwr	dBm	Actual optical input power level
HybdCur	A	Hybrid amplifier current
ModTemp	°C	Module temperature
Enable	N/A	Receiver on or off
Master	N/A	Master/Slave mode
WaveLen	nm	1310 or 1550 nm operation
NomPin	dBm	Nominal input power level

Configure Parameters Using the ICIM

Introduction

The CONFIG menu on the ICIM allows you to configure several receiver parameters.

Configuring Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Forward Receiver MODULE menu. From the MODULE menu, press the CFG key to display the CONFIG menu.

The following table shows the configurable parameters for the receiver.

Parameter	Description	Values	Default
Enable	Enables or disables the receiver.	• On • Off	On
Master	Configures the module as master or slave. If set to Master Off, the receiver begins operation with an external alarm signal	• On • Off	On
WaveLen	Configures the receiver for 1310 nm or 1550 nm operation.	• 1310 nm • 1550 nm	1550 nm
NomPin	Sets the nominal input level.	+5.0 dBm to –20.0 dBm in 0.5 dBm steps	3.0 dBm

Monitor Alarm Parameters Using LCI

Introduction

The Local Craft Interface (LCI) software allows you to view alarms that may exist for the receiver.

Alarm Information

The following receiver alarm information is available:

- Receiver enabled/disabled
- Hybrid current
- Optical power level
- Module temperature
- Maximum optical input power

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Major low
- Minor high
- Major high

Continued on next page

Monitoring Alarm Parameters

To monitor the alarms, navigate to the Module Details window of the Receiver (in the LCI module tree). The alarms are shown under the **Parameters** and **Alarms** headings.

The following table describes each receiver alarm parameter.

Parameter	Meaning	Alarm Condition	Type	Typical Range
Enable	Receiver enabled or disabled	Unit disabled by user	Major	Enabled /Disabled
Hybrid Current Draw	Hybrid current	Current = > .450 A or < .150 A	Minor	.150 A to .450 A
		Current = > .500 A or < .050 A	Major	.050 A to .500 A
InPwr	Optical power level	Optical power = > 1.5 dBm or < -1.5 dBm	Minor	-20.0 dBm to 5.0 dBm
		Optical power = > 2.0 dBm, < -2.0 dBm	Major	-20.0 dBm to 5.0 dBm
Module Tempera-ture	Module temperature	Module temp exceeds –20.0°C to 80.0°C	Minor	-20.0°C to 80.0°C
		Module temp exceeds –40.0°C to 90.0°C	Major	-40.0°C to 90.0°C
Max Input Power	Maximum optical input power	Optical input > 6.0 dBm	Major	> 6.0 dBm

Alarm Threshold Values

Alarm threshold is the value at which an alarm is triggered. The alarm threshold data for this module is shown below.

Alarm Display	Minor Low Limit	Minor High Limit	Major Low Limit	Major High Limit	Hysteresis
Enable	N/A	N/A	N/A	N/A	N/A
Hybrid Current Draw	.050 A	.150 A	.450 A	.500 A	.001 A
Internal Power Supply	-2.0 dBm	-1.5 dBm	1.5 dBm	2.0 dBm	1.0 dBm
Module Temperature	-40.0°C	-20.0°C	80.0°C	90.0°C	0°C
Max Input Power	N/A	N/A	N/A	N/A	N/A

Modify Alarm Limits Using LCI

Introduction

Using LCI, you can modify limits for several alarm parameters for the receiver.

Modifying Alarm Parameters

To modify the parameters, navigate to the Module Details window of the receiver (in the LCI module tree). The parameters are shown under the **Parameters** heading.

The following table shows parameters with alarm limits that can be modified.

Parameter	Meaning	Values	Possible Causes of Alarm
Module Temperature	Module temperature	-40.0°C to 70.0°C	Module temperature exceeds –40.0°C to 70.0°C
Optical Power	Optical output power	± 0.5 dBm of nominal	Internal problem. Telephone the Scientific-Atlanta assistance center in your area for assistance.

Monitor Status Parameters Using LCI

Introduction

The LCI software allows you to verify the status of the receiver.

Status Information

The following receiver status information is available.

- Optical input power
- Hybrid amplifier current
- Module temperature

Monitoring Status Parameters

To monitor the parameters, navigate to the Module Details window of the receiver (in the LCI module tree). The alarms are shown under the **Parameters** and **Status** headings.

The following table describes each receiver status parameter.

Parameter	Units	Meaning	Typical Value
Optical Power	dBm	Optical input power	0.0 dBm
Hybrid Current Draw	A	Hybrid amplifier current	0.350 A
Module Temperature	°C	Module temperature	25.8°C

Configure Parameters Using LCI

Introduction

The LCI software allows you to configure several receiver parameters.

Configuring Parameters

To configure the parameters, navigate to the Module Details window of the receiver (in the LCI module tree). The parameters are shown under the **Controls** heading.

The following table shows the configurable parameters for the receiver.

Parameter	Description	Values	Default
Enable	Enables or disables the receiver	• On = Enabled • Off = Disabled	Enabled
Master	When set to Off, receiver begins operation with an external alarm signal.	• On = Master • Off = Slave	On
Nominal InPwr	Sets the receiver nominal input signal level.	5 dBm to -20 dBm	3.0 dBm
Wave Length	Configures the receiver for 1310 nm or 1550 nm operation	• 1310 nm • 1550 nm	1550 nm

General Troubleshooting Information

Introduction

The following information:

- Lists the equipment you might need to troubleshoot the receiver
- Explains how to obtain troubleshooting assistance

Needed Equipment

You might need the following equipment to troubleshoot the receiver:

- Digital voltmeter
- Fiber connector cleaning materials

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the receiver, take note of the following warnings.

⚠ **WARNING:**

- **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
- **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The following troubleshooting information helps identify possible causes and solutions to receiver alarm conditions.

Troubleshooting Alarms

If the red Alarm indicator is illuminated or blinking, check the ICIM display or the appropriate LCI screen to determine the cause of the alarm.

Refer to the following table for troubleshooting assistance.

Alarm	Status	Possible Causes	Possible Solutions
InPwr	• Optical power = > 1.5 dBm or < -1.5 dBm • Optical power = > 2.0 dBm, < -2.0 dBm	Dirty or loose connector, or low input.	Check input source and fiber.
MaxInPwr	Optical input > 6.0 dBm	Dirty or loose connector, or low input.	Check input source and fiber.
HybdCur	• Current = > 450 mA or < 150 mA • Current = > 500 mA or < 50 mA	Internal problem.	Telephone the Scientific-Atlanta assistance center in your area.
ModTemp	Module temp exceeds -40.0°C to 70.0°C	Internal problem, fan tray failure, or ambient temperature	Telephone the Scientific-Atlanta assistance center in your area.
Enable	Unit disabled	Module disabled by user.	Enable module.
PsOk	Bus voltage status	Internal problem.	Telephone the Scientific-Atlanta assistance center in your area.

Receiver Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the receiver and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the receiver with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record laser power level, laser temperature readings, laser bias current, or power supply voltages.

Large variations in any of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called "canned air")

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use "Kleenex-type" tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

Continued on next page

Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Section E
Prisma II Reverse Video Receiver and Reverse Data Receiver

Overview

Introduction

The information in this section applies to the following Prisma II Reverse Receivers:

- Prisma II Reverse Video Receiver (data/video grade)
- Prisma II Reverse Data Receiver (data grade)

The instructions that follow refer to both receivers as “the receiver”.

In This Section

This section contains the following topics.

Monitor Alarm Parameters Using the ICIM

Introduction

The Intelligent Communications Interface Module (ICIM) in the Prisma II Chassis allows you to scroll through and view alarms that may exist for the receiver.

Receiver Alarm LED Description

The Alarm LED located on the receiver's front panel illuminates or blinks to indicate the state of the receiver.

The following table shows each possible receiver state.

If the Alarm LED:	This Indicates:
Blinks	a minor alarm condition.
Illuminates	a critical alarm condition.

Alarm Information

The following receiver alarm information is available:

- Optical power level
- Module temperature
- Maximum optical input power level
- Bus voltage status
- Manual (forced) alarms

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Major low
- Minor high
- Major high

Continued on next page

Monitoring Alarm Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Reverse Receiver MODULE menu. From the MODULE menu, press the **ALRM** key to display the ALARMS menu.

The following table describes each receiver alarm parameter.

Parameter	Meaning	Major Low Limit	Minor Low Limit	Minor High Limit	Major High Limit	Hysteresis	Operating Range
InPwr1	Optical input 1	-20.0 dBm	-4.0 dBm	2.0 dBm	3.2 dBm	1.0 dBm	-17.0 dBm to +2.0 dBm
InPwr2	Optical input 2	-20.0 dBm	-4.0 dBm	2.0 dBm	3.2 dBm	1.0 dBm	-17.0 dBm to +2.0 dBm
ModTemp	Module tempera-ture	-125.0°C	-85.0°C	85.0°C	125.0°C	1.0°C	-40.0°C and 65.0°C
InPwr1Mx	Maximum optical input power limit	-100.0 dBm	-100.0 dBm	3.2 dBm	3.2 dBm	N/A	N/A
InPwr2Mx	Maximum optical input power limit	-100.0 dBm	-100.0 dBm	3.2 dBm	3.2 dBm	N/A	N/A
PsOk	Bus voltage status	N/A	N/A	N/A	N/A	N/A	N/A
Alarm1	Manual (forced) alarm	N/A	N/A	N/A	N/A	N/A	N/A
Alarm2	Manual (forced) alarm	N/A	N/A	N/A	N/A	N/A	N/A

Monitor Status Parameters Using the ICIM

Introduction

The STATUS menu on the ICIM allows you to verify the status of the receiver.

Status Information

The following receiver status information is available.

- Optical power level
- Module temperature
- Mute status
- Manual (forced) alarms
- Receiver enabled/disabled
- Master/Slave mode
- Nominal input power level

Monitoring Status Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Reverse Receiver MODULE menu. From the MODULE menu, press the **STAT** key to display the STATUS menu.

The following table describes each receiver status parameter.

Parameter	Meaning	Operating Range
InPwr1	Optical input power for Rx 1	-17.0 dBm to +2.0 dBm
InPwr2	Optical input power for Rx 2	-17.0 dBm to +2.0 dBm
ModTemp	Module temperature	-40.0°C and 65.0°C
Mute1	Mute status for Rx 1	On or Off
Mute2	Mute status for Rx 2	On or Off
Alarm 1	Alarm for Rx 1	On or Off
Alarm 2	Alarm for Rx 2	On or Off
Enable 1	Rx 1 enabled	On or Off
Enable 2	Rx 2 enabled	On or Off
Master 1	Rx 1 master	On or Off
Master 2	Rx 2 master	On or Off
NomPwr1	Nominal input power	-20.0 dBm to 0.0 dBm
NomPwr2	Nominal input power	-20.0 dBm to 0.0 dBm

Configure Parameters Using the ICIM

Introduction

The CONFIG menu on the ICIM allows you to configure several receiver parameters.

Configuring Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Reverse Receiver MODULE menu. From the MODULE menu, press the CFG key to display the CONFIG menu.

The following table shows the configurable parameters for the receiver.

Parameter	Description	Values	Default
• Mute1 • Mute2	Force mute. Muting of the RF signal and removal of power to the amplifier **only** if the Enable control is on for this particular side.	• On=Mute on • Off=Mute off	Off
• Enable1 • Enable2	Enables or disables unit operation, i.e., muting enabled and no alarm capability.	• On=Enabled • Off=Disabled	On
• Alarm1 • Alarm2	Force alarm. Alarm relay is manually overridden **only** if the Enable control is On. This sets a particular side to alarm as if there were an internal alarm, i.e., Alarm output high, muting On as per Force Mute, above.	• On=Alarm on • Off=Alarm off	Off
• Master1 • Master2	Configures the module as master or slave. • If set to **Master,** the unit is controlled **only** by the Enable control, above. • If set to **Slave,** the unit is controlled by a combination of the Enable control and the external input CNT_IN_1 or CNT_IN_2.	• On=Master on • Off=Slave on	On
• Atten1 • Atten2	Sets the attenuation level of the output RF signal.	Decimal number between 0.0 and 20.0 dB, increments of 0.5 dB	0.0 dB
• NomPwr1 • NomPwr2	The nominal input optical power level, in dBm.	Decimal number between –20.0 and 0.0 dBm, increments of 0.5 dBm	0.0 dBm

Monitor Alarm Parameters Using LCI

Introduction

The Local Craft Interface (LCI) software allows you to view alarms that may exist for the receiver.

Alarm Information

The following receiver alarm information is available:

- Receiver enabled/disabled
- Hybrid current
- Optical power level
- Module temperature
- Maximum optical input power

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Major low
- Minor high
- Major high

Continued on next page

Monitoring Alarm Parameters

To monitor the alarms, navigate to the Module Details window of the Receiver (in the LCI module tree). The alarms are shown under the **Parameters** and **Alarms** headings.

The following table describes each receiver alarm parameter.

Note: LCI allows you to modify these parameters.

Parameter	Meaning	Major Low Limit	Minor Low Limit	Minor High Limit	Major High Limit	Hysteresis	Operating Range
InPwr1	Optical input 1	-20.0 dBm	-4.0 dBm	2.0 dBm	3.2 dBm	1.0 dBm	-17.0 dBm to +2.0 dBm
InPwr2	Optical input 2	-20.0 dBm	-4.0 dBm	2.0 dBm	3.2 dBm	1.0 dBm	-17.0 dBm to +2.0 dBm
ModTemp	Module tempera-ture	-125.0°C	-85.0°C	85.0°C	125.0°C	1.0°C	-40.0°C and 65.0°C

Monitor Status Parameters Using LCI

Introduction

The LCI software allows you to verify the status of the receiver.

Status Information

The following receiver status information is available.

- Optical input power
- Module temperature

Monitoring Status Parameters

To monitor the parameters, navigate to the Module Details window of the receiver (in the LCI module tree). The alarms are shown under the **Parameters** and **Status** headings.

The following table describes each receiver status parameter.

Parameter	Meaning	Operating Range
Rx 1 Optical Input Power	Displays optical input power for Rx 1	-17.0 dBm to +2.0 dBm
Rx 2 Optical Input Power	Displays optical input power for Rx 2	-17.0 dBm to +2.0 dBm
Module Temperature	Displays module temperature	-40.0°C and 65.0°C

Configure Parameters Using LCI

Introduction

The LCI software allows you to configure several receiver parameters.

Configuring Parameters

To configure the parameters, navigate to the Module Details window of the Receiver (in the LCI module tree). The parameters are shown under the **Controls** heading.

The following table shows the configurable parameters for the receiver.

Parameter	Description	Values	Default
• Rx 1 Mute Switch • Rx 2 Mute Switch	Force mute. Muting of the RF signal and removal of power to the amplifier **only** if the Enable control is on for this particular side.	• On=Mute on • Off=Mute off	Off
• Rx 1 Receiver Enable • Rx 1 Receiver Enable	Enables or disables unit operation, i.e., muting enabled and no alarm capability.	• On=Enabled • Off=Disabled	On
• Rx 1 Manual Alarm • Rx 2 Manual Alarm	Force alarm. Alarm relay is manually overridden **only** if the Enable control is On. This sets a particular side to alarm as if there were an internal alarm, i.e., Alarm output high, muting On as per Force Mute, above.	• On=Alarm on • Off=Alarm off	Off
• Rx 1 Master Select • Rx 2 Master Select	Configures the module as master or slave. • If set to **Master,** the unit is controlled **only** by the Enable control, above. • If set to **Slave,** the unit is controlled by a combination of the Enable control and the external input CNT_IN_1 or CNT_IN_2.	• On=Master on • Off=Slave on	On
• Rx 1 Attenuator • Rx 2 Attenuator	Sets the attenuation level of the output RF signal.	Decimal number between 0.0 and 20.0 dB, increments of 0.5 dB	0.0 dB

General Troubleshooting Information

Introduction

The following information:

- Lists the equipment you might need to troubleshoot the receiver
- Explains how to obtain troubleshooting assistance

Needed Equipment

You might need the following equipment to troubleshoot the receiver:

- Digital voltmeter
- Fiber connector cleaning materials

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the receiver, take note of the following warnings.

WARNING:

- **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
- **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The following troubleshooting information helps identify possible causes and solutions to receiver alarm conditions.

Troubleshooting Alarms

If the red Alarm indicator is illuminated or blinking, check the ICIM display or the appropriate LCI screen to determine the cause of the alarm.

Refer to the following table for troubleshooting assistance.

Alarm	Description	Possible Causes	Possible Solutions
InPwr1	Optical input 1	Broken fiber	Check fiber.
InPwr2	Optical input 2	Receiver failure	Check receiver.
ModTemp	Module temperature	Ambient temperature is too high due to: • Air conditioner malfunction	Diagnose the problem and repair or replace as needed.
		• Airflow through the rack is restricted or cut off	Ensure the airflow system has not been damaged or removed. Repair or replace as needed.
		• Fan tray cooling fans are not operating properly	Troubleshoot the fans. For help, telephone the Scientific-Atlanta assistance center in your area.
PsOK	Bus voltage status	Power supply faulty	Check power supply.

Receiver Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the receiver and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the receiver with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record laser power level, laser temperature readings, laser bias current, or power supply voltages.

Large variations in any of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called “canned air”)

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use “Kleenex-type” tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

Continued on next page

Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Chapter 3
Optical Switches

Overview

Introduction

This chapter provides information to assist you in maintaining and troubleshooting Prisma® and Prisma II™ Optical Switches.

Qualified Personnel

Only appropriately qualified and trained personnel should attempt to maintain or troubleshoot the switches described in this chapter.

WARNING:

Allow only qualified personnel to maintain or troubleshoot these switches. Otherwise, personal injury or equipment damage may occur.

In This Chapter

This chapter contains the following topics.

Section A
Prisma Model 6474 Optical Switches

Overview

Introduction

The information in this section applies to the Prisma 1310 nm and 1550 nm Model 6474 Optical Switches.

In This Section

This section contains the following topics.

Monitor Alarm Parameters

Introduction

From the ALARMS screen on the switch, you can determine whether there is a switch alarm condition and, if there is an alarm condition, the cause of the alarm.

If an alarm condition:

- Is present, the cause of the condition displays on the screen. Items that are not in the alarm state are passed over and are not displayed.
- Is not present, the message **No Alarms** displays on the screen.

Alarm Information

The following switch alarm information is available:

- Software self test
- Received optical power
- Auto/manual mode
- External control inputs
- Primary/backup mode
- +5 V DC digital power level
- +5 V analog power level
- -5 V power level
- +15 V DC control card power level
- +24 V DC backplane power level
- Backplane power supply status (primary and secondary)

Continued on next page

ALARMS Screen Description

The ALARMS screens let you quickly determine the cause of an alarm. When an ALARMS screen is active, press the Select key on the switch to rotate through the active alarms.

Each screen also displays the current parameter. If no alarm is active for a particular parameter, the module does not display that screen.

The following table shows the values displayed on the ALARMS screen for out-of-range errors or a failure.

ALARMS Screen Value	Description
OK	Component is operational or passes test (for parameters without an operating range).
HIGH	The measured level is above the operating range.
LOW	The measured level is below the operating range.
FAIL	Component, test, or signal failure (for parameters without an operating range).

Continued on next page

Monitoring Alarm Parameters

The following table describes each alarm parameter.

Parameter	Meaning	Values	Alarm Indicator
Self Test	Software self test	OK	Off
		FAILED	Illuminates
PoptA	Received optical power for input A	HIGH	Blinks
		LOW	Illuminates
PoptB	Received optical power for input B	HIGH	Blinks
		LOW	Illuminates
Manual	Auto/manual mode	Auto	Off
		Manual	Illuminates
• ExCtl1 • ExCtl2	External control inputs #1 and #2	External control input #1 is active. **Note:** External control input #2 is not currently used.	Blinks
BackUp	Primary/backup mode	Primary	Off
		Backup	Blinks
D5Vdc	+5 V digital DC power level	HIGH: 5.50 V	Illuminates
		LOW: Below 4.50 V	Illuminates
A5Vdc	+5 V analog power level	HIGH: Above 5.50 V	Illuminates
		LOW: Below 4.50 V	Illuminates
-5Vdc	-5 V power level	High: Above -4.50 V	Illuminates
		LOW: Below -5.50 V	Illuminates

Continued on next page

Parameter	Meaning	Values	Alarm Indicator
15Vdc	+15 V control card power level	HIGH: Above 16.50 V	Illuminates
		LOW: Below 13.50 V	Illuminates
24Vdc	+24 V backplane power level	HIGH: Above 26.40 V	Illuminates
		LOW: Below 22.60 V	Illuminates
PSPri	Primary backplane power supply status	OK	Off
		FAIL	Blinks
PSsec	Secondary backplane power supply status	OK	Off
		FAIL	Blinks

Monitor Status Parameters

Introduction

From the STATUS screen on the switch, you can check various parameters to verify the status of the switch.

Status Information

The following switch status information is available:

- Received optical power
- Switch SMC ID
- Primary input
- Bar/cross position
- Primary/backup mode
- Switch position
- Auto/manual mode
- Level switching threshold
- Return level threshold
- Wait time (time hysteresis)
- +5 V digital power level
- +5 V analog power level
- -5 V backplane power level
- +15 V control card power level
- +24 V backplane power level
- Power supply status

Continued on next page

STATUS Screen Description

The first STATUS screen is called the Summary STATUS screen, and it provides the following switch information:

- Optical power for input A in dBm
- Optical power for input B in dBm
- SMC ID of the switch

When in the summary STATUS screen, press the Select key on the switch to rotate through the remaining parameters.

Each parameter has its own STATUS screen that displays the following information:

- The parameter being monitored
- The measured level of the parameter being monitored
- A FAIL indication for parameters without an operating range that are not working
- Assessment of the measured level, against the level required for normal operation, for items without an operating range

The following table shows the assessments that can be displayed for each measured item.

STATUS Screen Value	Description
OK	The measured level is within the range for normal operation.
HIGH	The measured level is above the range for normal operation.
LOW	The measured level is below the range for normal operation.
FAIL	Component, test, or signal failure (for parameters without an operating range).

Continued on next page

Monitoring Status Parameters

The following table describes each status parameter.

Parameter	Meaning	Values
Summary STATUS Screen:		
• PoptA	Received optical power for input A	-13.0 dBm to +18.0 dBm
• PoptB	Received optical power for input B	-13.0 dBm to +18.0 dBm
• SMC	SMC ID of the switch	Programmable 0001 to 65535
PoptA	Received optical power for input A	-13.0 dBm to +18.0 dBm
PoptB	Received optical power for input B	-13.0 dBm to +18.0 dBm
Primry	Primary input **Note:** The asterisk indicates non-revertive mode.	• A • B
Posit	Bar/Cross position	• Bar • Cross
BackUp	Primary/Backup	• Primary • Backup
Posit	Switch position	• Bar • Cross
Auto/Manual	Auto or manual mode	• Auto • Manual
Thrsld	Level switching threshold	1.0 dB to 10.0 dB
Hpwr	Return level threshold	.5 dB to 5.0 dB
Htime	Wait time (time hysteresis)	0 to 12 minutes
D5Vdc	+5 V digital power level	0 V DC to +10.81 V DC

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Parameter	Meaning	Values
A5Vdc	+5 V analog power level	0 V DC to +10.81 V DC
-5Vdc	-5 V backplane power level	0 V DC to +9.8 V DC
15Vdc	+15 V control card power level	0 V DC to +32.42 V DC
24Vdc	+24 V backplane power level	0 V DC to +51.43 V DC
PsPri	Primary backplane power supply status	OK or FAIL
PsSec	Secondary backplane power supply status	OK or FAIL

General Troubleshooting Information

Introduction

The following information:

- Lists the equipment you might need to troubleshoot the switch
- Explains how to obtain troubleshooting assistance

Needed Equipment

You might need the following equipment to troubleshoot the switch:

- Digital voltmeter
- Spectrum analyzer

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the switch, take note of the following warnings.

⚠ **WARNING:**

- **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
- **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The information in this section provides possible solutions to the following types of alarm conditions:

- Switch
- Power supply

Troubleshooting Switch Alarms

The following table shows the possible causes of switch alarms and their solutions.

Alarm Condition	Status	Possible Causes	Possible Solutions
Software Self Test	OK	No alarms.	No action required.
	FAIL	One or more power supply voltages are out of specification.	Refer to **Troubleshooting Power Supply Alarms** later in this section.
		Optical power level is out of specification.	Refer to the Optical Power A or Balarm, below.
Optical Power A or B	High or Low	Received optical power at the input of the switch is out of specification.	Verify the input power level is within specification.
		The nominal and/or threshold values are not set properly.	Verify that the nominal and threshold values are set correctly.
Manual Mode	Manual	The switch has been placed in manual mode.	Proceed to the Switch Setup menu, and place the switch in Automatic mode.
External Control	Exctl1	The switch is being controlled by an external source.	Determine why the external control has taken control of the switch, and resolve the problem. **Note:** External control may be desirable in some systems.

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Alarm Condition	Status	Possible Causes	Possible Solutions
Backup Switch Position	• Bckup B • BckUp A	The switch has changed to the backup input due to one of the following causes: • Primary optical input is out of tolerance	Verify the input is within tolerance. Repair or adjust as needed.
		• An external control has forced a switch	Refer to the External Control alarm earlier in this table.
		• A manual switch has been set from the front panel or SMC.	Determine why the manual switch was enacted from the front panel. Repair or adjust to solve the problem, and reset the switch to the primary input.
Position Failure	Position failure	The switch position does not match the reported position.	• Ensure the module is inserted properly. • Verify the optical input levels are within tolerance. • Attempt to manually switch back and forth.

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Troubleshooting Power Supply Alarms

The following table shows the possible causes of power supply alarms and their solutions.

Note: Some or all of the steps will cause a service interruption.

Alarm	Status	Possible Causes	Possible Solutions
• +5 V DC Analog Power • +5 V DC Digital Power • -5 V DC Digital Power • +15 V DC Digital Power • +24 V DC Digital Power	High or Low	Loose, unplugged, or damaged power cords.	Check the power supply power cord and connections.
		A blown fuse on the power supply.	Check the power supply fuse. Repair or replace as needed.
		A faulty power supply module.	Verify proper power supply module operation. Repair or replace as needed.
		The switch is not seated properly in the chassis.	Verify that the switch is securely connected to the chassis.
		Damage to the chassis or module backplane connector.	Verify that there is no visible damage to the connector.
		• A faulty switch module. • No AC at receptacle	Are any other units in this chassis having the same problem? • If **no,** the switch may be faulty and should be replaced. • If **yes,** the chassis may have a problem. For help, telephone the Scientific-Atlanta assistance center in your area.

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Alarm	Status	Possible Causes	Possible Solutions
Backplane Power Supply Status (Primary and Secondary)	PSPri or PSsec Fail	The power supply status is: • Reported as in alarm • Not reported at all	Verify the operation of the power supplies. If they are functioning properly and no power supply related alarms are reported on any module in the chassis, the chassis may have a problem. For help, telephone the Scientific-Atlanta assistance center in your area.

Switch Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the switch and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the switch with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record the optical input level or power supply voltages.

Large variations in either of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called "canned air")

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use "Kleenex-type" tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

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Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Section B
Prisma II Optical Switch

Overview

Introduction

The information in this section applies to the Prisma II Optical Switch.

In This Section

This section contains the following topics.

Monitor Alarm Parameters Using the ICIM

Introduction

The Intelligent Communications Interface Module (ICIM) in the Prisma II Chassis allows you to scroll through and view alarms that may exist for the switch.

Switch Alarm LED Description

The Alarm LED located on the switch's front panel illuminates or blinks to indicate the state of the switch.

The following table shows each possible switch state.

If the Alarm LED:	This Indicates:
Blinks	a minor alarm condition.
Illuminates	a critical alarm condition.

Alarm Information

The following switch alarm information is available:

- Loss of light at one port
- Loss of light at both ports
- Module temperature
- Switch failure
- Voltage status

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Major low
- Minor high
- Major high

Continued on next page

Monitoring Alarm Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Optical Switch MODULE menu. From the MODULE menu, press the ALRM key to display the ALARMS menu.

The following table describes each switch alarm parameter.

Parameter	Meaning	Possible Cause of Alarm
PInLoss3	Loss of light at input 3.	Port 3 is dark.
PInLoss4	Loss of light at input 4.	Port 4 is dark.
BothDark	Loss of light at both inputs.	Both inputs are dark.
TempAlm	Module temperature is above high threshold or below low threshold.	Temperature alarm.
NoSwitch	Switch failure.	Switch has failed.
PsOK	Voltage status.	Voltage is acceptable.

Monitor Status Parameters Using the ICIM

Introduction

The STATUS menu on the ICIM allows you to verify the status of the switch.

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Optical Switch MODULE menu. From the MODULE menu, press the STAT key to display the STATUS menu.

Status Information

The following switch status information is available.

- Switch position
- Optical input power
- Module temperature
- Switch temperature
- Cross position
- Bar position
- Auto/Manual mode
- Wavelength of optical input
- Nominal input power
- Value relative to nominal below which the input optical power must fall for the switch to operate (auto mode only)
- Hysteresis amplitude
- Hysteresis time
- Switch position status (switch reverts to primary position after optical power is restored)
- Primary input port
- Default switch position

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Monitoring Status Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Optical Switch MODULE menu. From the MODULE menu, press the **STAT** key to display the STATUS menu.

The following table describes each switch status parameter.

Parameter	Units	Meaning	Typical Value
SwPos	N/A	Switch position.	Bar
PwrIn3	dBm	Optical input power on port 3.	0.0 dBm
PwrIn4	dBm	Optical input power on port 4.	0.0 dBm
ModTemp	°C	Module temperature.	+25.0°C
SwTemp	°C	Switch temperature.	+25.0°C
Cross	N/A	Cross position control	False (always)
Bar	N/A	Bar position control	False (always)
Mode	N/A	Auto or manual mode	Auto
WaveLen	nm	Wavelength of optical input for both inputs.	1550 nm
NomPIn3	dBm	Nominal input power at port 3.	0.0 dBm
NomPIn4	dBm	Nominal input power at port 4.	0.0 dBm
Delta	dB	The value relative to nominal below which the input optical power must fall for the switch to operate (auto mode only).	6.0 dB
HystAmpl	dB	Hysteresis amplitude: The value above which the input optical power must rise for the switch to begin the hysteresis timer.	3.0 dB
HystTime	Second	Hysteresis Time: Length of time that primary optical power must remain above the restore threshold before the switch will revert to the primary position. Only applies if Revert is True.	1.0 second
Revert	N/A	Allows switch to revert to the primary position after optical position is restored.	Auto
PrimeInp	N/A	Primary input port.	Port_4
DfltSw	N/A	Default switch position.	Bar

Configure Parameters Using the ICIM

Introduction

The CONFIG menu on the ICIM allows you to configure several switch parameters.

Configuring Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Optical Switch MODULE menu. From the MODULE menu, press the CFG key to display the CONFIG menu.

The following table shows the configurable parameters for the switch.

Parameter	Description	Values	Default
Cross	If True, the switch to change to the Cross position. Reset to False after < 50 ms. Manual mode command.	• False • True	False
Bar	If True, the switch to change to the Bar position. Reset to False after < 50 ms. Manual mode command.	• False • True	False
Mode	Selects automatic or manual mode.	• Manual • Auto	Auto
WaveLen	Selects the wavelength of optical input for both inputs.	• 1310 nm • 1550 nm	1550 nm
NomPIn3	Nominal input optical power at port 3, in dBm	• **1310 nm:** 13.0 dBm to 13.0 dBm, increments of 0.1 dBm • **1550 nm:** 13.0 dBm to 18.0 dBm, increments of 0.1 dBm	-3.0 dBm
NomPIn4	Nominal input optical power at port 4, in dBm.		
Delta	The value (in dB relative to nominal) below which the input optical power must fall for the switch to operate. Auto mode only.	1.0 to 10.0 dB, increments of 0.1 dB	1.0 dB

Continued on next page

Parameter	Description	Values	Default
HystAmpl	Hysteresis Amplitude: the value (in dB relative to switching threshold) above which the input optical power must rise for the switch to begin the hysteresis timer before restoring original switch position. Only applies if Revert is True. Auto mode only.	0.5 to 9.5 dB, increments of 0.1 dB	0.5
HystTime	Hysteresis Time. Auto mode only. Length of time that primary optical power must remain above the restore threshold before switch will revert to primary position. Only applies if Revert is True.	Integer in seconds, between 0 and 720 (0 to 12 minutes)	1
Revert	Auto mode only. Allows switch to revert to primary position after optical power is restored. In Manual, switch will remain in backup position.	• Manual • Auto	Auto
PrimInp	Selects the primary optical input. For auto mode triggering.	• Port 3 • Port 4	Port 4
DfltSw	Selects the normal switch position. Auto mode only.	• Bar • Cross	Bar

Monitor Alarm Parameters Using LCI

Introduction

The Local Craft Interface (LCI) software allows you to view alarms that may exist for the switch.

Alarm Information

The following switch alarm information is available:

- Loss of light
- Module temperature

Monitoring Alarm Parameters

To monitor the alarms, navigate to the Module Details window of the switch (in the LCI module tree). The alarms are shown under the **Parameters** and **Alarms** headings.

The following table describes each switch alarm parameter.

Parameter	Meaning	Possible Cause of Alarm
Loss of Light Status	Loss of light	Input dark
Module Temperature	Module temperature is above the high threshold or below the low threshold	Temperature alarm

Modify Alarm Limits Using LCI

Introduction

Using LCI, you can modify the nominal input power for both ports.

Modifying Alarm Parameters

To modify the nominal input power parameters, navigate to the Module Details window of the switch (in the LCI module tree). The parameters are shown under the **Parameters** heading.

The following table shows parameters with alarm limits that can be modified.

Parameter	Meaning	Values
Port 3 Optical Power	Nominal input optical power at input 3, in dBm	• **1310 nm: -**13.0 dBm to 13.0 dBm, increments of 0.1 dBm • **1550 nm: -**13.0 dBm to 18.0 dBm, increments of 0.1 dBm
Port 3 Optical Power	Nominal input optical power at input 3, in dBm	

Monitor Status Parameters Using LCI

Introduction

The LCI software allows you to verify the status of the switch.

Status Information

The following switch status information is available.

- Input optical power
- Switch position
- Module temperature

Continued on next page

Monitoring Status Parameters

To monitor the parameters, navigate to the Module Details window of the switch (in the LCI module tree). The alarms are shown under the **Parameters** and **Status** headings.

The following table describes each switch status parameter.

Parameter	Units	Meaning	Typical Value
Port 3 Optical Power	dBm	Input optical power on Port 3	• 1310 nm: -13.0 dBm to 13.0 dBm • 1550 nm: 13.0 dBm to 18.0 dBm
Port 4 Optical Power	dBm	Input optical power on Port 4	• 1310 nm: -13.0 dBm to 13.0 dBm • 1550 nm: 13.0 dBm to 18.0 dBm
Switch Position	Integer	Read switch position	Bar/Cross
Module Temperature	°C	Module temperature	-40.0°C to +80.0°C

Configure Parameters Using LCI

Introduction

The LCI software allows you to configure several switch parameters.

Configuring Parameters

To configure the parameters, navigate to the Module Details window of the switch (in the LCI module tree). The parameters are shown under the **Controls** heading.

The following table shows the configurable parameters for the switch.

Parameter	Description	Values	Default
Port 3 Optical Power	Nominal input optical power at input 3, in dBm.	• **1310 nm:** -13.0 dBm to 13.0 dBm, increments of 0.1 dBm • **1550 nm:** -13.0 dBm to 18.0 dBm, increments of 0.1 dBm	-3.0 dBm
Port 4 Optical Power	Nominal input optical power at input 4, in dBm.		
Mode Status	Selects automatic or manual mode.	• Manual • Automatic	Automatic
Set Cross Position	If True, the switch to change to the Cross position. Reset to False after < 50 ms.	• False • True	False
Set Bar Position	If True, the switch to change to the Bar position. Reset to False after < 50 ms.	• False • True	False
Wave Length	Selects the wavelength of optical input.	• 1310 nm • 1550 nm	1550 nm
Delta	The value (in dB relative to nominal) below which the input optical power must fall for the switch to operate.	1.0 dB to 10.0 dB, increments of 0.1 dB	1.0 dB

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Parameter	Description	Values	Default
Hysteresis Amplitude	Hysteresis Amplitude: the value (in dB relative to switching threshold) above which the input optical power must rise for the switch to begin the hysteresis timer before restoring original switch position. Only applies if Revert is True.	0.5 dB to 9.5 dB, increments of 0.1 dB	0.5 dB
Revert	• In Auto, allows switch to revert to primary position after optical power is restored. • In Manual, switch will remain in backup position	• Manual • Auto	Auto
Primary Optical Input	Selects the primary optical input.	• Port 3 • Port 4	Port 4
Set Switch Position	Selects the Normal switch position.	• Cross • Bar	Bar

General Troubleshooting Information

Introduction

The following information:

- Lists the equipment you might need to troubleshoot the switch
- Explains how to obtain troubleshooting assistance

Needed Equipment

You might need the following equipment to troubleshoot the switch:

- Digital voltmeter
- Fiber connector cleaning materials

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the switch, take note of the following warnings.

WARNING:

- **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
- **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The following troubleshooting information helps identify possible causes and solutions to switch alarm conditions.

Troubleshooting Alarms

If the red Alarm indicator is illuminated or blinking, check the ICIM display or the appropriate LCI screen to determine the cause of the alarm.

Refer to the following table for troubleshooting assistance.

Alarm	Meaning	Possible Causes	Possible Solutions
PInLoss3	Loss of light at input 3	Input 3 dark.	• Check both optical sources. • Check optical connections.
PInLoss4	Loss of light at input 4	Input 4 dark.	• Check both optical source. • Check optical connections.
TempAlm	Module temperature is above or below the threshold	Ambient temperature is too high due to: • Air conditioner malfunction.	Diagnose the problem and repair or replace as needed.
		• Airflow through the rack restricted or cut off.	Ensure the airflow system has not been damaged or removed. Repair or replace as needed.
		• Fan tray cooling fans are not operating properly.	Troubleshoot the fans. For help, telephone the Scientific-Atlanta assistance center in your area.
BothDark	Loss of light at both inputs	Inputs 3 and 4 are dark.	• Check both optical sources. • Check optical connections.
NoSwitch	Failure of switch	• Switch not seated properly. • Switch failure.	Check module seating. For help, telephone the Scientific-Atlanta assistance center in your area.
PsOk	Status of voltage rails	Power supply OK.	No action required.

Switch Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the switch and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the switch with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record the optical input level or power supply voltages.

Large variations in either of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called "canned air")

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use "Kleenex-type" tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

Continued on next page

Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Chapter 4
Optical Amplifiers

Overview

Introduction

This chapter provides information to assist you in maintaining and troubleshooting Prisma® and Prisma II™ Optical Amplifiers.

Qualified Personnel

Only appropriately qualified and trained personnel should attempt to maintain or troubleshoot the amplifiers described in this chapter.

> ⚠ **WARNING:**
>
> **Allow only qualified personnel to maintain or troubleshoot these amplifiers. Otherwise, personal injury or equipment damage may occur.**

In This Chapter

This chapter contains the following topics.

Section A
Prisma Model 6476 EDFA Optical Amplifiers

Overview

Introduction

The information in this section applies to the following Prisma Model 6476 EDFA Optical Amplifiers:

- Model 6476-16 EDFA Optical Amplifier
- Model 6476-16H EDFA Optical Amplifier
- Model 6476-19 EDFA Optical Amplifier
- Model 6476-20H EDFA Optical Amplifier

In This Section

This section contains the following topics.

Monitor Alarm Parameters

Introduction

From the ALARMS screen on the amplifier, you can determine whether there is an amplifier alarm condition and, if there is an alarm condition, the cause of the alarm.

If an alarm condition:

- Is present, the cause of the condition displays on the screen. Items that are not in the alarm state are passed over and are not displayed.
- Is not present, the message **No Alarms** displays on the screen.

Alarm Information

The following amplifier alarm information is available:

- Software self test
- Power output
- Input power
- Laser bias current
- TE cooler current
- Laser temperature
- Module temperature
- Pump status
- Pump power supply
- +5 V DC digital power level
- +5 V DC analog power level
- -5 V DC analog power level
- +15 V DC analog power level
- +24 V DC analog power level
- Backplane power supply status (primary and secondary)
- Key switch position

Continued on next page

ALARMS Screen Description

The ALARMS screens let you quickly determine the cause of an alarm. When an ALARMS screen is active, press the Select key on the amplifier to rotate through the active alarms.

Each screen also displays the current parameter. If no alarm is active for a particular parameter, the module does not display that screen.

Alarm Parameters

The following table describes each alarm parameter.

Parameter	Meaning	Description
No Alarms	No alarms	No alarms are active.
Self Test	Software self test	Software self test failed.
Pout	Power output	Amplifier power is outside its normal operating range.
Pin	Input power	Optical power into the amplifier is outside its required level.
Ilas	Laser bias current	Laser bias current is outside normal operating range.
Itec	TE cooler current	Current level to the TE current is outside normal operating range.
Ptmp	Laser temperature	Temperature of the laser is outside operating range.
Mtemp	Module temperature	Temperature of the unit is outside normal operating range.
Pump	Pump	Pump failure.
PSint	Pump power supply	One or more of the pump's power supplies is out of spec.
D5Vdc	+5 V DC digital power level	The +5 V DC power level for analog circuitry is outside normal range.
A5Vdc	+5 V DC analog power level	The +5 V DC power level for digital circuitry is outside normal range.

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Parameter	Meaning	Description
-5Vdc	-5 V DC analog power level	The -5 V DC power level is outside normal range.
15Vdc	+15 V DC analog power level	The +15 V DC control card power level is outside normal range.
24Vdc	+24 V DC analog power level	The +24 V DC power level is outside normal range.
PSpri	Power supply	The primary backplane power supply alarm.
PSsec	Power supply	The secondary backplane power supply alarm.
KeySw	Key switch position	The key switch is in the Off position.

Monitor Status Parameters

Introduction

From the STATUS screen on the amplifier, you can check various parameters to verify the status of the amplifier.

Status Information

The following amplifier status information is available:

- EDFA On/End of life percentage
- Output power level
- Input power level
- Laser current
- Thermoelectric cooler current
- Pump temperature
- Module temperature
- Heat sink temperature
- Pump status
- Internal power supply status
- +5 V DC digital power level
- +5 V DC analog power level
- -5 V DC backplane power level
- +15 V DC analog power level
- +24 V DC analog power level
- Power supply status
- Key switch position

Continued on next page

STATUS Screen Description

The first STATUS screen is called the Summary STATUS screen, and it provides the following amplifier information:

- Output power level in dBm
- Input power level in dBm
- SMC ID of the amplifier

When in the summary STATUS screen, press the Select key on the amplifier to rotate through the remaining parameters.

Status Parameters

The following table describes each status parameter.

Parameter	Meaning	Description
Summary STATUS Screen:		
• Pout	Module summary	Output power level
• Pin		Input power level
• ID		Unit SMC ID number
EDFA/EOL	EDFA On/End of life	Displays EDFA On or Off and End of Life percentage
Pout	Output power	Output power in dBm
Pin	Input power	Input power in dBm
Ilas	Laser current	Laser current in mA
TE Cooler Current	Thermoelectric cooler current	Current for thermoelectric cooler in amperes
Ptmp	Pump temperature	Laser pump temperature in degrees Celsius
Mtemp	Module temperature	Module temperature in degrees Celsius
Htmp	Heat sink temperature	Heat sink temperature in degrees Celsius

Continued on next page

Parameter	Meaning	Description
Pump	Pump status	Status of the pump
PSint	Internal power supply	Status of the internal EDFA power supply
D5Vdc	+5 V DC digital power level	Status of the +5 V DC digital circuitry
A5Vdc	+5 V DC analog power level	Status of the +5 V DC analog circuitry
-5Vdc	-5 V DC backplane power level	Status of the -5 V DC power
15Vdc	+15 V DC analog power level	Status of the +15 V DC control card power
24Vdc	+24 V DC analog power level	Status of the +24 V DC power
PSpri	Power supply	Primary backplane power supply alarm
PSsec	Power supply	Secondary backplane power supply alarm
KeySw	Key switch position	Position of the key switch

Amplifier Specifications

Introduction

The specifications listed in the following tables can be useful when troubleshooting the amplifiers.

Model 6476-16 EDFA Optical Amplifier

Power Requirements

Parameter	Values
Power supply	• Model 6470-2 Chassis • Model 6471 Power Supply
Power consumption	Maximum: 10 DC watts

Environmental Specifications

Parameter	Values
Operating temperature	0.0°C to +50.0°C
Humidity	Maximum: 85%, non-condensing

Optical Characteristics

Parameter	Values
Wavelength	1535–1565 nm
Gain medium	Erbium-doped fiber
Pump source	980 nm InGaAs diode laser
Optical connectors	E-2000/APC, SC/APC, FC/APC

Continued on next page

Performance Characteristics

Parameter	Values
Input power range	0.0 to 10.0 dBm
Output power	16.0 dBm
Power stability	± 5% over temperature range
Optical return loss	> 50.0 dB
Noise figure (5 dBm input power)	< 5.0 dB (typical)

Model 6476-19 EDFA Optical Amplifier

Power Requirements

Parameter	Values
Power supply	• Model 6470-2 Chassis • Model 6471 Power Supply
Power consumption	Maximum: 10 DC watts

Environmental Specifications

Parameter	Values
Operating temperature	0.0°C to +50.0°C
Storage temperature	-30.0°C to +80.0°C
Humidity	Maximum: 90%, non-condensing

Optical Characteristics

Parameter	Values
Wavelength	1535–1565 nm
Gain medium	Erbium-doped fiber
Pump source	980 nm InGaAs diode laser

Continued on next page

Performance Characteristics

Parameter	Values
Input power range	0.0 to 10.0 dBm
Output power (at 2.5 dBm input)	• Minimum: 19.0 dBm (single output) • Minimum: 16.0 dBm (dual output)
Output stability	± 0.2 dB
Gain flatness	± 0.2 dB
Optical return loss	Maximum: -50 dB
Noise figure	• +2.5 dBm input: < 5.0 dB • +5.0 dBm input: < 5.5 dB
Polarization sensitivity	± 0.1 dB
RIN	< -155.0 dB/Hz
Optical isolation	> 40.0 dB

Models 6476-16H and 6476-20H EDFA Optical Amplifiers

Power Requirements

Parameter	Values
Power supply	• Model 6470-2 Chassis • Model 6471 Power Supply
Power consumption	Maximum: 18 DC watts

Environmental Specifications

Parameter	Values
Operating temperature	-20.0°C to +65.0°C
Storage temperature	-30.0°C to +80.0°C
Humidity	Maximum: 90%, non-condensing

Continued on next page

Optical Characteristics

Parameter	Values
Wavelength	1535–1565 nm
Gain medium	Erbium-doped fiber
Pump source	980 nm InGaAs diode laser

Performance Characteristics

Parameter	Values
Input power range	0.0 dBm to 10.0 dBm
Output power (at 2.5 dBm input)	• Model 6476-16H: 16.0 dBm • Model 6476-20H: – 20.0 dBm (one output) – 17.0 dBm each (two outputs)
Output stability	± 0.2 dB
Gain flatness	± 0.2 dB
Optical return loss	Maximum: -50.0 dB
Noise figure (at 2.5 dBm input)	• Model 6476-16H: < 5.0 dB • Model 6476-20H: < 5.5 dB
Polarization sensitivity	± 0.1 dB
RIN	< -155.0 dB/Hz
Optical isolation	> 40.0 dB

General Troubleshooting Information

Introduction

The following information:

- Lists the equipment you might need to troubleshoot the amplifier
- Explains how to obtain troubleshooting assistance

Needed Equipment

You might need the following equipment to troubleshoot the amplifier:

- Digital voltmeter
- Spectrum analyzer
- Fiber connector cleaning materials

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the amplifiers, take note of the following warnings.

⚠ **WARNING:**

- **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
- **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The following troubleshooting information helps identify possible causes and solutions to amplifier alarm conditions.

Troubleshooting Alarms

Refer to the following table for troubleshooting assistance.

Alarm Condition	Possible Causes	Possible Solutions
AC power is off	Power connection is loose.	Secure all power connections and the line cord.
	AC power failure.	Check other displays for power indication.
	Module indicator is burned out.	Contact Scientific-Atlanta for a replacement. For instructions, refer to Chapter 6, **Customer Information.**
SM indicator is off	Status monitoring not in use.	Normal situation. The SM indicator lights only when the amplifier has received data within the last 10 minutes.
	SM connection is loose.	Secure the SM connector.
	SM indicator is burned out.	Contact Scientific-Atlanta for a replacement. For instructions, refer to Chapter 6, **Customer Information.**

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Alarm Condition	Possible Causes	Possible Solutions
Optical power is low or off	Fiber path is broken with bends or bad path.	• Check optical cable for breaks or bends tighter than the fiber specification, and correct the situation. • Clean fiber connections. For instructions, refer to **Fiber Optic Connector Cleaning Procedure** later in this section.
	Power failure.	Ensure that all AC power is present and all power connections are secure.
	Laser current at maximum.	Verify that the input signal is present and the front panel reading is accurate. For help, telephone the Scientific-Atlanta assistance center in your area.

Amplifier Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the amplifier and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the amplifier with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record optical input level, optical output level, or laser current levels.

Large variations in any of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called "canned air")

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use "Kleenex-type" tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

Continued on next page

Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Section B
Prisma Models 6476-22 and 6476-25
CLAD Optical Amplifiers

Overview

Introduction

The information in this section applies to the following Prisma CLAD Optical Amplifiers:

- Model 6476-22 CLAD Optical Amplifier
- Model 6476-25 CLAD Optical Amplifier

In This Section

This section contains the following topics.

Monitor Alarm Parameters

Introduction

From the ALARMS screen on the amplifier, you can determine whether there is an amplifier alarm condition and, if there is an alarm condition, the cause of the alarm.

If an alarm condition:

- Is present, the cause of the condition displays on the screen. Items that are not in the alarm state are passed over and are not displayed.
- Is not present, the message **No Alarms** displays on the screen.

Alarm Information

The following amplifier alarm information is available:

- Software self test
- Power output
- Input power
- Laser diode current
- Laser current
- TE cooler current
- Laser diode temperature
- Module temperature
- Pump temperature
- Pump controller status
- +5 V DC digital power level
- +5 V DC analog power level
- -5 V DC analog power level
- +15 V DC analog power level
- +24 V DC analog power level
- Backplane power supply status (primary and secondary)
- Key switch position

Continued on next page

ALARMS Screen Description

The ALARMS screens let you quickly determine the cause of an alarm. When an ALARMS screen is active, press the Select key on the amplifier to rotate through the active alarms.

Each screen also displays the current parameter. If no alarm is active for a particular parameter, the module does not display that screen.

Alarm Parameters

The following table describes each alarm parameter.

Parameter	Meaning	Description
No Alarms	No alarms	No alarms are active.
Self Test	Software self test	Software self test failed.
Pout	Power output	Amplifier power is outside its normal operating range.
Pin	Input power	Power into the amplifier is outside its normal operating range.
IlasA	Laser diode A current	Current level to laser diode A is outside normal operating range.
IlasB	Laser diode B current	Current level to laser diode B is outside normal operating range.
IlimA	Laser A current	Laser A current is outside normal operating range.
IlimB	Laser B current	Laser B current is outside normal operating range.
ItecA	TE cooler A current	TE cooler A temperature is outside normal operating range.
ItecB	TE cooler B current	TE cooler B temperature is outside normal operating range.
PtmpA	Laser diode A temperature	Temperature of laser diode A is outside operating range.
PtmpB	Laser diode B temperature	Temperature of laser diode B is outside operating range.

Continued on next page

Parameter	Meaning	Description
Mtemp	Module temperature	Temperature of the unit is outside normal operating range.
HtmpA	Pump A temperature	Temperature of laser A is outside normal operating range.
HtmpB	Pump B temperature	Temperature of laser B is outside normal operating range.
PumpA	Pump controller A	Pump A controller failure.
PumpB	Pump controller B	Pump B controller failure.
PSint	Power supply	Internal power supply status.
D5Vdc	+5 V DC digital power level	The +5 V DC power level for analog circuitry is outside normal range.
A5Vdc	+5 V DC analog power level	The +5 V DC power level for digital circuitry is outside normal range.
-5Vdc	-5 V DC backplane power level	The -5 V DC power level is outside normal operating range.
15Vdc	+15 V DC control card power level	The +15 V DC control card power level is outside normal operating range.
24Vdc	+24 V DC analog power level	The +24 V DC power level is outside normal operating range.
PSpri	Backplane power	Primary backplane power supply status.
PSsec	Backplane power	Secondary backplane power supply status.
KeySw	Key switch position	The key switch is in the Off position.

Monitor Status Parameters

Introduction

From the STATUS screen on the amplifier, you can check various parameters to verify the status of the amplifier.

Status Information

The following amplifier status information is available:

- Software self test
- Power output
- Power input
- Laser diode current
- Laser current limit
- TE cooler current
- Laser diode temperature
- Module temperature
- Pump temperature
- Controller temperature
- Internal power supply
- +5 V DC digital power level
- +5 V DC analog power level
- -5 V DC analog power level
- +15 V DC analog power level
- +24 V DC analog power level
- Backplane power supply status (primary and secondary)
- Key switch position

Continued on next page

STATUS Screen Description

The STATUS menu on the ICIM allows you to verify the status of the amplifier.

Status Parameters

The following table describes each status parameter.

Parameter	Meaning	Description
Pout	Power output	Output power level
Pin	Power input	Input power level
ID	SMC ID	Module SMC ID number
IlasA	Laser diode A current	Laser diode A current in mA
IlasB	Laser diode B current	Laser diode B current in mA
IlimA	Laser A current limit	Hardware current limit for laser A in mA
IlimB	Laser B current limit	Hardware current limit for laser B in mA
ItecA	TE cooler A current	Current for thermoelectric cooler A in amperes
ItecB	TE cooler B current	Current for thermoelectric cooler B in amperes
PtmpA	Laser diode A temperature	Laser diode A temperature in degrees Celsius
PtmpB	Laser diode B temperature	Laser diode B temperature in degrees Celsius
Mtemp	Module temperature	Module temperature in degrees Celsius
HtmpA	Pump A temperature fault	Status of pump A temperature
HtmpB	Pump B temperature fault	Status of pump B temperature
PumpA	Controller temperature fault	Status of controller A temperature
PumpB	Controller temperature fault	Status of controller B temperature
PSint	Internal power supply	Status of the internal power supply

Continued on next page

Parameter	Meaning	Description
D5Vdc	+5 V DC digital power level	Status of the +5 V DC power for digital circuitry
A5Vdc	+5 V DC analog power level	Status of the +5 V DC power for analog circuitry
-5Vdc	-5 V DC backplane power level	Status of the -5 V DC power
15Vdc	+15 V DC control card power level	Status of the +15 V DC control card
24Vdc	+24 V DC analog power level	Status of the +24 V DC power
PSpri	Backplane Power	Primary backplane power supply status
PSsec	Backplane Power	Secondary backplane power supply status
KeySw	Key switch	Position of the key switch

Amplifier Specifications

Introduction

The specifications listed in the following tables can be useful when troubleshooting the amplifiers.

Specifications

Power Requirements

Parameter	Values
Power supply	• Model 6470-2 Chassis • Model 6471 Power Supply
Power consumption	Maximum: 85 DC watts

Environmental Specifications

Parameter	Values
Operating temperature	0.0°C to +50.0°C
Humidity	5–85%, non-condensing

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Optical Characteristics

Parameter	Values
Wavelength	1535–1565 nm
Output power uniformity	• Model 6475-22: ≤ 1.0 dB • Model 6475-25: ≤ 1.2 dB
Optical return loss	50.0 dB
Noise figure (6 dBm input power)	Typical: < 6.0 dB
Optical connectors	E-2000/APC, SC/APC, FC/APC (wide or narrow key)

Performance Characteristics

Parameter	Values
Input power	0.0 dBm to 10.0 dBm
Output power	• Minimum: 25.0 dBm • Eight ports at 15.5 dBm each
Power stability	± 5% over temperature range

General Troubleshooting Information

Introduction

The following information:

- Lists the equipment you might need to troubleshoot the amplifier
- Explains how to obtain troubleshooting assistance

Needed Equipment

You might need the following equipment to troubleshoot the amplifier:

- Digital voltmeter
- Spectrum analyzer
- Fiber connector cleaning materials

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the amplifiers, take note of the following warnings.

⚠ **WARNING:**

- **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
- **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The following troubleshooting information helps identify possible causes and solutions to amplifier alarm conditions.

Troubleshooting Alarms

Refer to the following table for troubleshooting assistance.

Alarm Condition	Possible Causes	Possible Solutions
AC power is off	Power connection is loose.	Secure all power connections and the line cord.
	AC power failure.	Check other displays for power indication.
	Module indicator is burned out.	Contact Scientific-Atlanta for a replacement. For instructions, refer to Chapter 6, **Customer Information.**
SM indicator is off	Status monitoring not in use.	Normal situation. The SM indicator lights only when the amplifier has received data within the last 10 minutes.
	SM connection is loose.	Secure the SM connector.
	SM indicator is burned out.	Contact Scientific-Atlanta for a replacement. For instructions, refer to Chapter 6, **Customer Information.**
Optical power is low or off	Fiber path is broken with bends or bad path.	• Check optical cable for breaks or bends tighter than the fiber specification, and correct the situation. • Clean fiber connections. For instructions, refer to **Fiber Optic Connector Cleaning Procedure** later in this section.
	Power failure.	Ensure that all AC power is present and all power connections are secure.

Amplifier Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the amplifier and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the amplifier with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record optical input level, optical output level, or laser current levels.

Large variations in any of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called "canned air")

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  - Use a sprayer (a fountain pump is also adequate)
  - Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use "Kleenex-type" tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

Continued on next page

Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Section C
Prisma II Optical Amplifiers

Overview

Introduction

The information in this section applies to the following Prisma II Optical Amplifiers:

- Prisma II Optical Amplifier (1x13 dBm)
- Prisma II Optical Amplifier (1x16 dBm)
- Prisma II Optical Amplifier (1x17 dBm)
- Prisma II Optical Amplifier (1x20 dBm)
- Prisma II Optical Amplifier (2x17 dBm)
- Prisma II Optical Amplifier (4x17 dBm)
- Prisma II Optical Amplifier (8x17 dBm)
- Prisma II Post Amplifier

In This Section

This section contains the following topics.

Monitor Alarm Parameters Using the ICIM

Introduction

The Intelligent Communications Interface Module (ICIM) in the Prisma II Chassis allows you to scroll through and view alarms that may exist for the amplifier.

Amplifier Alarm LED Description

The Alarm LED located on the amplifier's front panel illuminates or blinks to indicate the state of the amplifier.

The following table shows each possible amplifier state.

If the Alarm LED:	This Indicates:
Blinks	a minor alarm condition.
Illuminates	a critical alarm condition.

Alarm Information

The following amplifier alarm information is available:

- Laser bias current
- Optical input power
- Optical output power
- Enable/disable module status
- Laser temperature
- Power supply fault

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Major low
- Minor high
- Major high

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Monitoring Alarm Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Optical Amplifier MODULE menu. From the MODULE menu, press the **ALRM** key to display the ALARMS menu.

The following table describes each amplifier alarm parameter.

Parameter	Meaning	Major Low Threshold	Minor Low Threshold	Minor High Threshold	Major High Threshold	Hysteresis
LasBias	Laser bias current	-32 A	-32 A	-.1 A	-.01 A	.001 A
InPwr	Optical input power	-15.0 dBm	-5.0 dBm	20.0 dBm	45.0 dBm	1.0 dBm
OutPwr	Optical output	-1.0 dBm	-0.7 dBm	0.7 dBm	1.0 dBm	0.1 dBm
Enable	Module on or off	N/A	N/A	N/A	N/A	N/A
Laser Tempera-ture	Laser tempera-ture	-9.0°C	-9.0°C	30.0°C	45.0°C	1.0°C
IntPs	Power supply fault	N/A	N/A	N/A	N/A	N/A

Monitor Status Parameters Using the ICIM

Introduction

The STATUS menu on the ICIM allows you to verify the status of the amplifier.

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Optical Amplifier MODULE menu. From the MODULE menu, press the STAT key to display the STATUS menu.

Status Information

The following amplifier status information is available.

- Optical input power
- Optical output power
- Laser temperature
- Laser operating current limit
- Laser operating current
- Thermoelectric cooler current
- Module temperature
- Laser in-service hours
- Laser on or off
- Optical power attenuation
- Master or slave operation
- Low input alarm enabled/disabled

Note: Not all parameters pertain to every optical amplifier. However some optical amplifiers have multiple lasers and will have multiple laser temperatures, limits, bias, etc. These multiples are designated in numerical order.

Example: LasBias1, LasBias 2, LasBias3; LasTemp1, LasTemp2, LasTemp3.

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Monitoring Status Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Optical Amplifier MODULE menu. From the MODULE menu, press the **STAT** key to display the STATUS menu.

The following table describes each amplifier status parameter.

Parameter	Units	Meaning
InPwr	dBm	Optical input power
OutPwr	dBm	Optical output power
LasTemp	°C	Laser temperature
LasLim	A	Laser operating current limit
LasBias	A	Laser operating current
TecCur	A	Thermoelectric cooler current
ModTemp	°C	Module temperature
LaserOn	Hrs.	Laser in service hours
Enable	N/A	Laser on or off
SetAtten	dB	Optical power attenuation
Master	N/A	Master or slave operation
LoInpInh	N/A	Disables low input alarm

Configure Parameters Using the ICIM

Introduction

The CONFIG menu on the ICIM allows you to configure several amplifier parameters.

Configuring Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Optical Amplifier MODULE menu. From the MODULE menu, press the CFG key to display the CONFIG menu.

The following table shows the configurable parameters for the amplifier.

Parameter	Description	Values	Default
Enable	Turns optical amplifier on/off.	• On • Off	On
SetAtten	Optical power attenuation.	0.0 dB to 3.0 dB in 1.0 dB steps	0.0 dB
Master	Master (default). When set to Slave, will only start with an external alarm signal.	• On • Off	On
LoInpInh	Disables low input alarm.	• On • Off	On

Monitor Alarm Parameters Using LCI

Introduction

The Local Craft Interface (LCI) software allows you to view alarms that may exist for the amplifier.

Alarm Information

The following amplifier alarm information is available:

- Laser bias current
- Optical input power
- Optical output
- Laser temperature

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Major low
- Minor high
- Major high

Continued on next page

Monitoring Alarm Parameters

To monitor the alarms, navigate to the Module Details window of the amplifier (in the LCI module tree). The alarms are shown under the **Parameters** and **Alarms** headings.

The following table describes each amplifier alarm parameter.

Parameter	Meaning	Major Low Threshold	Minor Low Threshold	Minor High Threshold	Major High Threshold	Hysteresis
Laser Bias Current	Laser bias current	-32 A	-32 A	-.1 A	-.01 A	.001 A
Laser Input Power	Optical input power	-15.0 dBm	-5.0 dBm	20.0 dBm	45.0 dBm	1.0 dBm
Output Power	Optical output	-1.0 dBm	-0.7 dBm	0.7 dBm	1.0 dBm	0.1 dBm
Laser Tempera-ture	Laser tempera-ture	-9.0°C	-9.0°C	30.0°C	45.0°C	1.0°C

Modify Alarm Limits Using LCI

Introduction

Using LCI, you can modify limits for several alarm parameters for the amplifier.

Modifying Alarm Parameters

To modify the parameters, navigate to the Module Details window of the amplifier (in the LCI module tree). The parameters are shown under the **Parameters** heading.

The following table shows parameters with alarm limits that can be modified.

Parameter	Meaning	Major Low Threshold	Minor Low Threshold	Minor High Threshold	Major High Threshold	Hysteresis
Laser Bias Current	Laser bias current	-32 A	-32 A	-.1 A	-.01 A	.001 A
Output Power	Optical output	-1.0 dBm	-0.7 dBm	0.7 dBm	1.0 dBm	0.1 dBm

Monitor Status Parameters Using LCI

Introduction

The LCI software allows you to verify the status of the amplifier.

Status Information

The following amplifier status information is available.

- Optical input power
- Optical output power
- Laser temperature
- Laser operating limit
- Laser operating current
- Thermoelectric cooler current
- Module temperature
- Laser in-service hours

Note: Not all parameters pertain to every optical amplifier. However some optical amplifiers have multiple lasers and will have multiple laser temperatures, limits, bias, etc. These multiples are designated in numerical order.

Example: LasBias1, LasBias 2, LasBias3; LasTemp1, LasTemp2, LasTemp3.

Continued on next page

Monitoring Status Parameters

To monitor the parameters, navigate to the Module Details window of the amplifier (in the LCI module tree). The alarms are shown under the **Parameters** and **Status** headings.

The following table describes each amplifier status parameter.

Parameter	Units	Meaning
Laser Input Power	dBm	Optical input power
Output Power	dBm	Optical output power
Laser Temperature	°C	Laser temperature
Laser Bias Current Limit	A	Laser operating limit
Laser Bias Current	A	Laser operating current
TEC Current	A	Thermoelectric cooler current
Module Temperature	°C	Module temperature
Laser On Time	Hrs	Laser in-service hours

Configure Parameters Using LCI

Introduction

The LCI software allows you to configure several amplifier parameters.

Configuring Parameters

To configure the parameters, navigate to the Module Details window of the amplifier (in the LCI module tree). The parameters are shown under the **Controls** heading.

The following table shows the configurable parameters for the amplifier.

Parameter	Description	Values	Default
Enable Laser	Turns optical amplifier on/off.	• On = Enabled • Off = Disabled	Enabled
Optical Power Attenuation	Optical power attenuation.	• 0 dB to 3.0 dB in 1.0 dB steps	0.0 dB
Master	Master (default). When set to Slave, will only start with an external alarm signal.	• On = Master • Off = Slave	Master
Low Input Alarm Inhibit	Disables low input alarm.	• On = Alarm Enabled • Off = Alarm Disabled	Alarm Enabled

General Troubleshooting Information

Introduction

The following information:

- Lists the equipment you might need to troubleshoot the amplifier
- Explains how to obtain troubleshooting assistance

Needed Equipment

You might need the following equipment to troubleshoot the amplifier:

- Digital voltmeter
- Fiber connector cleaning materials

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the amplifier, take note of the following warnings.

WARNING:

- **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
- **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The following troubleshooting information helps identify possible causes and solutions to amplifier alarm conditions.

Troubleshooting Alarms

If the red Alarm indicator is illuminated or blinking, check the ICIM display or the appropriate LCI screen to determine the cause of the alarm.

Refer to the following table for troubleshooting assistance.

Alarm	Parameter	Possible Causes	Possible Solutions
LasBias	Laser current	Internal problem	Telephone the Scientific-Atlanta assistance center in your area.
InPwr	Optical input	• Dirty or loose connector • Low input	Check input source.
OutPwr	Optical output	• Low input • Internal problem	Check input. For help, telephone the Scientific-Atlanta assistance center in your area.
		Module disabled	Enable module.
LasTemp	Laser temperature	• Internal problem • Fan tray failure • Ambient temperature	Telephone the Scientific-Atlanta assistance center in your area.
IntPs	Input power supply	Internal problem	Telephone the Scientific-Atlanta assistance center in your area.

Amplifier Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the amplifier and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Weekly	• Check all parameters and test points • Record data • Make repairs and adjustments as needed
Quarterly	• Make sure all cables are mated properly • Inspect cables for stress and chafing • Make sure all retaining screws are tight
When needed	Carefully clean the amplifier with a soft cloth that is dampened with mild detergent

It may be helpful to establish a maintenance record or log for this module. You might want to record optical input level, optical output level, or laser current levels.

Large variations in any of the parameters above should be investigated prior to failure.

Fiber Optic Connector Cleaning Procedure

Introduction

Clean fiber optic connectors can help prevent interconnect problems and therefore aid system performance. When optical connectors are disconnected and reconnected, the fiber surface can become dirty or scratched.

The goal of cleaning the connectors is to remove all dust and contaminants without leaving any residue behind.

> ⚠ **WARNING:**
>
> **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Required Materials

The following equipment is required to clean the ends of fiber optic connectors.

- Optical-grade (91%) isopropyl alcohol
- Lint-free wipes
- Compressed air (also called "canned air")

Tips for Optimal Fiber Optic Connector Performance

Follow these guidelines to ensure optimal connector performance.

- Connect or disconnect optical connectors only when necessary.
- Always use compressed air before cleaning the fiber optic connectors.
- Use end caps on connectors when they are not in use.
- Always use compressed air to clean the end caps.
- Use optical-grade isopropyl alcohol of at least 91% or greater. Anything less than 91% isopropyl may leave a film on the fiber surface, creating more problems.
- Do not contaminate your alcohol supply.
  – Use a sprayer (a fountain pump is also adequate)
  – Do not put used alcohol back into the main container
- Use only lint-free wipes. Never use "Kleenex-type" tissues.
- If you have any degraded signal problems, clean the fiber optic connector.

Continued on next page

Cleaning Fiber Optic Connectors

Follow these steps to clean a fiber optic connector.

1. Remove loose dirt or dust from the end of the connector by using compressed air to blow dirt off the fiber and the connector.
2. Dampen a lint-free wipe with optical-grade (91%) isopropyl alcohol. If no wipes are available, use Scientific-Atlanta's ferrule cleaner, part number 468517.
3. Wipe the end of the connector with the lint-free wipe.
4. Inspect the end of the connector for obvious contamination.
5. Mate the connector with an adapter or cover with an end cap.

Chapter 5
Chassis

Overview

Introduction

This chapter provides information to assist you in maintaining and troubleshooting Prisma® and Prisma II™ Chassis.

Qualified Personnel

Only appropriately qualified and trained personnel should attempt to maintain or troubleshoot the chassis described in this chapter.

> ⚠ **WARNING:**
>
> **Allow only qualified personnel to maintain or troubleshoot these chassis. Otherwise, personal injury or equipment damage may occur.**

In This Chapter

This chapter contains the following topics.

Section A
Prisma Model 6470-R2 Chassis

Overview

Introduction

The information in this section applies to the Prisma Model 6470-R2 Chassis.

In This Section

This section contains the following topics.

Power Supply Specifications

Introduction

The Model 6471 Rack-Mount Power Supply provides primary and backup power for two Prisma chassis.

Each power supply consists of the following three modules:

- Two power supply modules, each providing primary power to one chassis
- One power supply module that provides backup power for both chassis

Each module consists of two sub-modules. One sub-module supplies ±5 V power, and the other supplies 24 V power.

The rack-mount power supply is available in 120/240 V AC or -48 V DC.

Model 6471-RM 120/240 V AC Rack-Mount Power Supply

Notes:

- Specifications shown reflect typical equipment performance at stated reference levels in the recommended operating configuration.
- Unless otherwise noted, specifications are based on measurements made in accordance with NCTA Practices for Measurements on Cable Television Systems using standard frequency assignments and are referenced to 20°C (68°F).

Electrical Requirements

Parameter	Values
Voltage requirements (Switch-selectable, factory preset for 120 V AC input)	• 3 x 120/240 V AC (±15%) • 50.0/60.0 Hz
Power consumption	• 120 V AC: 5.0 A x 3 • 240 V AC: 2.5 A x 3
Output voltage (One of each per module)	• +24 V DC/7.0 A • +5 V DC/15.0 A • -5 V DC/1.6 A
Efficiency	≥ 80%
Line regulation	±0.5%
Load regulation	±3.0%
Power stability	±5.0% over temperature range

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Environmental Specifications

Parameter	Values
Operating temperature range (ambient)	• 0.0°C to 50.0°C • 32.0°F to 122.0°F

Mechanical Specifications

Parameter	Values
Depth	• 13.75 in. • 34.9 cm
Width	• 17.25 in. • 43.8 cm
Height	• 5.25 in. • 13.3 cm
Weight	• 19.0 lb • 8.6 kg
Eurocard	3 U x 220 mm x 12 HP

Model 6471-RM –48 V DC Rack-Mount Power Supply

Notes:

- Specifications shown reflect typical equipment performance at stated reference levels in the recommended operating configuration.
- Unless otherwise noted, specifications are based on measurements made in accordance with NCTA Practices for Measurements on Cable Television Systems using standard frequency assignments and are referenced to 20°C (68°F).

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Electrical Requirements

Parameter	Values
Voltage requirements	3 x 48 V DC (42–56 V DC)
Power consumption	6.5 A x 3 @ 48 V DC
Output voltage (One of each per module)	• +24 V DC/7.0 A • +5 V DC /15.0 A • -5 V DC / 1.6 A
Efficiency	≥ 80.0%
Line regulation	± 0.5%
Load regulation	± 3.0%
Power stability	±5.0%

Environmental Specifications

Parameter	Values
Operating temperature range (ambient)	• 0.0°C to 50.0°C • 32.0°F to 122.0°F

Mechanical Specifications

Parameter	Values
Depth	• 13.75 in. • 34.9 cm
Width	• 17.25 in. • 43.8 cm
Height	• 5.25 in. • 13.3 cm
Weight	• 19.0 lb • 8.6 kg
Eurocard	3 U x 220 mm x 12 HP

General Troubleshooting Information

Introduction

Because the main function of the chassis is to distribute power and establish communication links for the modules installed in the chassis, most troubleshooting involves the modules that are installed in the chassis. However, in some instances, you may need to troubleshoot the chassis.

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting, take note of the following warnings.

> ⚠ **WARNING:**
>
> - **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
> - **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The information in this section provides possible solutions to alarm conditions.

Troubleshooting Alarm Alarms

The following table shows the possible causes of alarm conditions and their possible solutions.

Alarm Condition	Possible Causes	Possible Solutions
• Display is not on. • POWER indicator is off. • STDBY indicator is on.	Power supply connection is loose.	Verify that all power supply connections are secure.
	Loss of system power.	Verify that AC power is present at receptacle.
	AC power failure; backup in use.	Check other displays and indicators for power indication.
	Module indicator is burned out.	Contact Scientific-Atlanta for a replacement indicator. For instructions, refer to Chapter 6**, Customer Information.**
SM indicator is on.	Status monitoring is not in use.	This is normal. Even when the SM connector is secure, the indicator turns on only when the CIM has received incoming data within the last 10 minutes.
	Status monitoring connection is loose.	Verify that the SM connector is secure.
	SM indicator is burned out.	Contact Scientific-Atlanta for a replacement indicator. For instructions, refer to Chapter 6**, Customer Information.**
Cooling fan is not working.	Loss of power.	Check/reconnect power.
	Fan failure.	Replace fan.

Chassis Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the chassis and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Quarterly	• Make sure all cables are properly mated. • Inspect cables for stress and chafing. • Make sure all retaining screws are tight.
When needed	Carefully clean the chassis with a soft cloth that is dampened with mild detergent.

It may be helpful to establish a maintenance record or log for the chassis. Large variations in any parameters should be investigated prior to failure.

Operating Temperature

The chassis operating temperature range is 0.0°C to +50.0°C.

⚠ **CAUTION:**

Avoid damage to this product! Operating this product above the maximum operating temperature specified voids the warranty.

Section B
Prisma II Chassis

Overview

Introduction

The information in this section applies to the Prisma II Chassis.

In This Section

This section contains the following topics.

Monitor Alarm Parameters Using the ICIM

Introduction

The Intelligent Communications Interface Module (ICIM) in the Prisma II Chassis allows you to scroll through and view alarms that may exist for the fan tray and power supply.

Alarm LED Descriptions

The Alarm LED located on the chassis front panel illuminates or blinks to indicate the state of the chassis fan tray. The Alarm LED on the power supply indicates the state of the power supply.

The following table shows each possible state.

If the Alarm LED:	This Indicates:
Blinks	a minor alarm condition.
Illuminates	a critical alarm condition.

Alarm Information

The following power supply and fan tray alarm information is available:

Power Supply Alarms

- AC input
- +24 V DC output voltage
- +5 V DC output voltage
- -5 V DC output voltage

Fan Tray Alarms

- Fan status
- Fan tray temperature

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Major low
- Minor high
- Major high

Continued on next page

Monitoring Alarm Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Power Supply and Fan Tray Software MODULE menu. From the MODULE menu, press the ALRM key to display the ALARMS menu.

Note: Because the Prisma II Power Supplies are double-wide modules, the ICIM labels the power supply installed in slots 1 and 2 as Ps1. Ps3 refers to the power supply installed in slots 3 and 4.

The following table describes each alarm parameter.

Parameter	Meaning	Range	Possible Cause of Alarm
FansOk	Fan status	OK	No problem
ChasTemp	Fan tray temperature	-40.0°C to 65.0°C	Check ventilation
PS1_ACIn	AC input for slot 1 power supply	OK	• Check power cord. • Make sure power supply is fully seated.
PS1+24	Slot 1 power supply +24 V DC output voltage	23.8 V DC to 25.6 V DC	• Make sure power supply is fully seated. • Check voltage with digital multi-meter.
PS1+5VDC	Slot 1 power supply +5 V DC output voltage	4.9 V DC to 5.6 V DC	
PS1-5VDC	Slot 1 power supply -5 V DC output voltage	-5.6 V DC to -4.9 V DC	
PS3_ACIn	AC input for slot 3 power supply	OK	• Check power cord. • Make sure power supply is fully seated.
PS3+24	Slot 3 power supply +24 V DC output voltage	23.8 V DC to 25.6 V DC	• Make sure power supply is fully seated. • Check voltage with digital multi-meter.
PS3+5VDC	Slot 3 power supply +5 V DC output voltage	4.9 V DC to 5.6 V DC	
PS3-5VDC	Slot 3 power supply -5 V DC output voltage	-5.6 V DC to -4.9 V DC	

Monitor Status Parameters Using the ICIM

Introduction

The STATUS menu on the ICIM allows you to verify the status of the power supply and fan tray.

Status Information

The following power supply and fan tray status information is available:

Power Supply Alarms

- Installed/not installed
- +24 V output voltage
- +5 V output voltage
- –5 V output voltage
- Internal temperature
- +24 V rail voltage
- +5 V rail voltage
- –5 V rail voltage

Fan Tray Alarms

- Internal temperature
- Fans running/shut off

Continued on next page

Monitoring Status Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Power Supply and Fan Tray Software MODULE menu. From the MODULE menu, press the **STAT** key to display the STATUS menu.

Note: Because the Prisma II Power Supplies are double-wide modules, the ICIM labels the power supply installed in slots 1 and 2 as Ps1. Ps3 refers to the power supply installed in slots 3 and 4.

The following table describes each status parameter.

Parameter	Units	Values
Ps1Inst	N/A	• 1 if slot 1 power supply is installed • 0 if power supply is not installed
Ps1+24V	V	Slot 1 power supply +24 V output voltage
Ps1+5V	V	Slot 1 power supply +5 V output voltage
Ps1-5V	V	Slot 1 power supply –5 V output voltage
Ps1Temp	°C	Internal temperature of slot 1 power supply
Ps3Inst	N/A	• 1 if slot 3 power supply is installed • 0 if power supply is not installed
Ps3+24V	V	Slot 3 power supply +24 V output voltage
Ps3+5V	V	Slot 3 power supply +5 V output voltage
Ps3-5V	V	Slot 3 power supply –5 V output voltage
Ps3Temp	°C	Internal temperature of slot 3 power supply
Chas+24V	V	Voltage on the chassis +24 V rail
Chas+5V	V	Voltage on the chassis +5 V rail
Chas-5V	V	Voltage on the chassis –5 V rail
ChasTemp	°C	Internal temperature of the fan tray
FansOn	N/A	• 1 if fans are running • 0 if the fans are shut off

Monitor Alarm Parameters Using LCI

Introduction

The Local Craft Interface (LCI) software allows you to view alarms that may exist for the power supply or fan tray.

Alarm Information

The following power supply and fan tray alarm information is available:

Power Supply Alarms

- AC input
- +24 V DC output voltage
- +5 V DC output voltage
- -5 V DC output voltage

Fan Tray Alarms

- Fan status
- Fan tray temperature

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Major low
- Minor high
- Major high

Continued on next page

Monitoring Alarm Parameters

To monitor the alarms, navigate to the Module Details window of the fan tray (in the LCI module tree). The alarms are shown under the **Parameters** and **Alarms** headings.

The following table describes each alarm parameter.

Parameter	Meaning	Range	Possible Cause of Alarm
Fans Status	Fan status	Normal to alarm	No problem.
Chassis Temperature	Fan tray temperature	-40.0°C to 65.0°C	Check ventilation.
Input PS1 Status	AC input for slot 1 power supply	OK	Check power cord. Make sure power supply is fully seated.
+24V Power Supply 1	Slot 1 power supply +24 V DC output voltage	23.8 V DC to 25.6 V DC	Make sure power supply is fully seated. Check voltage with digital multi-meter.
+5V Power Supply 1	Slot 1 power supply +5 V DC output voltage	4.9 V DC to 5.6 V DC	
-5V Power Supply 1	Slot 1 power supply -5 V DC output voltage	-5.6 V DC to -4.9 V DC	
Input PS3 Status	AC input for slot 3 power supply	OK	Check power cord. Make sure power supply is fully seated.
+24V Power Supply 3	Slot 3 power supply +24 V DC output voltage	23.8 V DC to 25.6 V DC	Make sure power supply is fully seated. Check voltage with digital multi-meter.
+5V Power Supply 3	Slot 3 power supply +5 V DC output voltage	4.9 V DC to 5.6 V DC	
-5V Power Supply 3	Slot 3 power supply -5 V DC output voltage	-5.6 V DC to -4.9 V DC	

Modify Alarm Limits Using LCI

Introduction

Using LCI, you can modify limits for several alarm parameters for the power supply and fan tray.

Modifying Alarm Parameters

To modify the parameters, navigate to the Module Details window of the fan tray (in the LCI module tree). The parameters are shown under the **Parameters** heading.

The following table shows parameters with alarm limits that can be modified.

Parameter	Meaning	Typical Range	Major Low Limit	Minor Low Limit	Minor High Limit	Major High Limit
Chassis Tempera-ture	Fan tray temperature	-40.0°C to 65.0°C	-40.0°C	-35.0°C	60.0°C	65.0°C
+24V Power Supply 1	Slot 1 power supply +24 V DC output voltage	23.8 V DC to 25.6 V DC	22.7 V DC	23.7 V DC	25.7 V DC	26.7 V DC
+5V Power Supply 1	Slot 1 power supply +5 V DC output voltage	4.9 V DC to 5.6 V DC	4.8 V DC	5.1 V DC	5.7 V DC	5.8 V DC
-5V Power Supply 1	Slot 1 power supply -5 V DC output voltage	-5.6 V DC to -4.9 V DC	-5.8 V DC	-5.7 V DC	-5.1 V DC	-4.8 V DC
+24V Power Supply 3	Slot 3 power supply +24 V DC output voltage	23.8 V DC to 25.6 V DC	22.7V DC	23.7 V DC	25.7 V DC	26.7 V DC
+5V Power Supply 3	Slot 3 power supply +5 V DC output voltage	4.9 V DC to 5.6 V DC	4.8 V DC	5.1 V DC	5.7 V DC	5.8 V DC
-5V Power Supply 3	Slot 3 power supply -5 V DC output voltage	-5.6 V DC to -4.9 V DC	-5.8 V DC	-5.7 V DC	-5.1 V DC	-4.8 V DC

Monitor Status Parameters Using LCI

Introduction

The LCI software allows you to verify the status of the power supply and fan tray.

Status Information

The following power supply and fan tray status information is available.

- Power supply installed/not installed
- +24 V power supply status
- +5 V power supply status
- -5 V power supply status
- Power supply temperature
- Fan tray temperature
- Fans running/not running

Continued on next page

Monitoring Status Parameters

To monitor the parameters, navigate to the Module Details window of the fan tray (in the LCI module tree). The alarms are shown under the **Parameters** and **Status** headings.

The following table describes each status parameter.

Parameter	Units	Values
Power Supply 1 Installed	N/A	• **Yes** if slot 1 power supply is installed • **No** if power supply not installed
+24V Power Supply 1	V	Slot 1 power supply +24 V output voltage
+5V Power Supply 1	V	Slot 1 power supply +5 V output voltage
-5V Power Supply 1	V	Slot 1 power supply -5 V output voltage
Power Supply 1 Temperature	°C	Internal temperature of the slot 1 power supply
Power Supply 3 Installed	N/A	• **Yes** if slot 3 power supply is installed • **No** if power supply not installed
+24V Power Supply 3	V	Slot 3 power supply +24 V output voltage
+5V Power Supply 3	V	Slot 3 power supply +5 V output voltage
-5V Power Supply 3	V	Slot 3 power supply -5 V output voltage
Power Supply 3 Temperature	°C	Internal temperature of slot 3 power supply
Chassis Temperature	°C	Internal temperature of the fan tray
Fans Running	N/A	• **Yes** if fans are running • **No** if fans are shut off

General Troubleshooting Information

Introduction

Because the main function of the chassis is to distribute power and establish communication links for the modules installed in the chassis, most troubleshooting involves the modules that are installed in the chassis. However, in some instances, you may need to troubleshoot the chassis.

The following information:

- Lists the equipment you might need to troubleshoot the chassis
- Explains how to obtain troubleshooting assistance

Needed Equipment

You might need a digital multimeter (DMM) to troubleshoot the chassis.

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting, take note of the following warnings.

WARNING:

- **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
- **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The information in this section provides possible solutions to the following types of alarm conditions:

- General
- Power supply and fan tray

Troubleshooting General Alarms

The following table shows the possible causes of general alarm conditions and their possible solutions.

Alarm Condition	Possible Causes	Possible Solutions
POWER indicator is off.	Power supply connection is loose.	Verify that all power supply connections are secure.
	Loss of system power.	Verify that AC power is present at receptacle.
	AC power failure; backup in use.	Check other displays and indicators for power indication.
	Module indicator is burned out.	Contact Scientific-Atlanta for a replacement indicator. For instructions, refer to Chapter 6**, Customer Information.**
Alarm indicator is on.	Power supply problem.	Verify that all power supply connections are secure.
Cooling fans are not working.	Loss of power.	Check/reconnect power.
	Fan failure.	Replace fan tray.

Continued on next page

Troubleshooting Power Supply and Fan Tray Alarms

The following table shows the possible solutions to power supply and fan tray alarms.

Parameter	Meaning	Range	Possible Cause of Alarm
FansOk	Fan status	OK	No problem
ChasTemp	Fan tray temperature	-40.0°C to 65.0°C	Check ventilation
PS1_ACIn	AC input for slot 1 power supply	OK	• Check power cord. • Make sure power supply is fully seated.
PS1+24	Slot 1 power supply +24 V DC output voltage	23.8 V DC to 25.6 V DC	• Make sure power supply is fully seated. • Check voltage with digital multi-meter.
PS1+5VDC	Slot 1 power supply +5 V DC output voltage	4.9 V DC to 5.6 V DC	
PS1-5VDC	Slot 1 power supply -5 V DC output voltage	-5.6 V DC to -4.9 V DC	
Ps1Temp	Slot 1 power supply temperature	-40.0°C to 65.0°C	Check fan operation.
PS3_ACIn	AC input for slot 3 power supply	OK	• Check power cord. • Make sure power supply is fully seated.
PS3+24	Slot 3 power supply +24 V DC output voltage	23.8 V DC to 25.6 V DC	• Make sure power supply is fully seated. • Check voltage with digital multi-meter.
PS3+5VDC	Slot 3 power supply +5 V DC output voltage	4.9 V DC to 5.6 V DC	
PS3-5VDC	Slot 3 power supply –5 V DC output voltage	-5.6 V DC to -4.9 V DC	
Ps3Temp	Slot 3 power supply temperature	-40.0°C to 65.0°C	Check fan operation.

Chassis Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the chassis and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Daily	• Keep the transparent plastic front panel installed. • When not making chassis connections or adjustments, keep the panel closed to help protect the cables, modules, and ICIM.
Quarterly	• Make sure all cables are properly mated. • Inspect cables for stress and chafing. • Make sure all retaining screws are tight.
When needed	Carefully clean the chassis with a soft cloth that is dampened with mild detergent.

It may be helpful to establish a maintenance record or log for the chassis. Large variations in any parameters should be investigated prior to failure.

Section C
Prisma II High Density Chassis

Overview

Introduction

The information in this section applies to the Prisma II High Density Chassis (HDC).

In This Section

This section contains the following topics.

Monitor Alarm Parameters Using the ICIM

Introduction

The Intelligent Communications Interface Module (ICIM) in the Prisma II HDC allows you to scroll through and view alarms that may exist for the power supply and fan tray.

Alarm LED Descriptions

The Alarm LED located on the chassis front panel illuminates or blinks to indicate the state of the chassis fan tray. The Alarm LED on the power supply indicates the state of the power supply.

The following table shows each possible state.

If the Alarm LED:	This Indicates:
Blinks	a minor alarm condition.
Illuminates	a critical alarm condition.

Alarm Information

The following power supply and fan tray alarm information is available:

Power Supply Alarms

- AC input
- +24 V DC output voltage
- +5 V DC output voltage
- -5 V DC output voltage

Fan Tray Alarms

- Fan status
- Fan tray temperature

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Major low
- Minor high
- Major high

Continued on next page

Monitoring Alarm Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Power Supply and Fan Tray Software MODULE menu. From the MODULE menu, press the **ALRM** key to display the ALARMS menu.

The following table describes each alarm parameter.

Parameter	Meaning	Range	Possible Cause of Alarm
FansOk	Fan status	OK	No problem
ChasTemp	Fan tray temperature	0.0°C to 50.0°C	Check ventilation
PS1_ACIn	AC input for slot 1 power supply	OK	• Check power cord. • Make sure power supply is fully seated.
PS1+24	Slot 1 power supply +24 V DC output voltage	23.8 V DC to 25.6 V DC	• Make sure power supply is fully seated. • Check voltage with digital multi-meter.
PS1+5VDC	Slot 1 power supply +5 V DC output voltage	4.9 V DC to 5.6 V DC	
PS1-5VDC	Slot 1 power supply -5 V DC output voltage	-5.6 V DC to -4.9 V DC	
PS3_ACIn	AC input for slot 3 power supply	OK	• Check power cord. • Make sure power supply is fully seated.
PS3+24	Slot 3 power supply +24 V DC output voltage	23.8 V DC to 25.6 V DC	• Make sure power supply is fully seated. • Check voltage with digital multi-meter.
PS3+5VDC	Slot 3 power supply +5 V DC output voltage	4.9 V DC to 5.6 V DC	
PS3-5VDC	Slot 3 power supply -5 V DC output voltage	-5.6 V DC to -4.9 V DC	

Monitor Status Parameters Using the ICIM

Introduction

The STATUS menu on the ICIM allows you to verify the status of the power supply and fan tray.

Status Information

The following power supply and fan tray status information is available:

Power Supply Alarms

- Installed/not installed
- +24 V output voltage
- +5 V output voltage
- –5 V output voltage
- Internal temperature
- +24 V rail voltage
- +5 V rail voltage
- -5 V rail voltage

Fan Tray Alarms

- Internal temperature
- Fans running/shut off

Continued on next page

Monitoring Status Parameters

From the MAIN or SCROLL menus on the ICIM, navigate to the Prisma II Power Supply and Fan Tray Software MODULE menu. From the MODULE menu, press the STAT key to display the STATUS menu.

The following table describes each status parameter.

Parameter	Units	Values
Ps1Inst	N/A	• 1 if slot 1 power supply is installed • 0 if power supply is not installed
Ps1+24V	V	Slot 1 power supply +24 V output voltage
Ps1+5V	V	Slot 1 power supply +5 V output voltage
Ps1-5V	V	Slot 1 power supply -5 V output voltage
Ps1Temp	°C	Internal temperature of slot 1 power supply
Chas+24V	V	Voltage on the chassis +24 V rail
Chas+5V	V	Voltage on the chassis +5 V rail
Chas-5V	V	Voltage on the chassis -5 V rail
ChasTemp	°C	Internal temperature of the fan tray
FansOn	N/A	• 1 if fans are running • 0 if the fans are shut off

Monitor Alarm Parameters Using LCI

Introduction

The Local Craft Interface (LCI) software allows you to view alarms that may exist for the power supply or fan tray.

Alarm Information

The following power supply and fan tray alarm information is available:

Power Supply Alarms

- AC input
- +24 V DC output voltage
- +5 V DC output voltage
- -5 V DC output voltage

Fan Tray Alarms

- Fan status
- Fan tray temperature

Alarm Limits

Alarms limits fall into one of the following categories.

- Minor low
- Major low
- Minor high
- Major high

Continued on next page

Monitoring Alarm Parameters

To monitor the alarms, navigate to the Module Details window of the fan tray (in the LCI module tree). The alarms are shown under the **Parameters** and **Alarms** headings.

The following table describes each alarm parameter.

Parameter	Meaning	Range	Possible Cause of Alarm
Fans Status	Fan status	Normal to alarm	No problem.
Chassis Temperature	Fan tray temperature	-40.0°C to 65.0°C	Check ventilation.
Input PS1 Status	AC input for slot 1 power supply	OK	• Check power cord. • Make sure power supply is fully seated.
+24V Power Supply 1	Slot 1 power supply +24 V DC output voltage	23.8 V DC to 25.6 V DC	• Make sure power supply is fully seated. • Check voltage with digital multi-meter.
+5V Power Supply 1	Slot 1 power supply +5 V DC output voltage	4.9 V DC to 5.6 V DC	
-5V Power Supply 1	Slot 1 power supply -5 V DC output voltage	-5.6 V DC to -4.9 V DC	
Input PS3 Status	AC input for slot 3 power supply	OK	• Check power cord. • Make sure power supply is fully seated.
+24V Power Supply 3	Slot 3 power supply +24 V DC output voltage	23.8 V DC to 25.6 V DC	• Make sure power supply is fully seated. • Check voltage with digital multi-meter.
+5V Power Supply 3	Slot 3 power supply +5 V DC output voltage	4.9 V DC to 5.6 V DC	
-5V Power Supply 3	Slot 3 power supply -5 V DC output voltage	-5.6 V DC to -4.9 V DC	

Modify Alarm Limits Using LCI

Introduction

Using LCI, you can modify limits for several alarm parameters for the power supply and fan tray.

Modifying Alarm Parameters

To modify the parameters, navigate to the Module Details window of the fan tray (in the LCI module tree). The parameters are shown under the **Parameters** heading.

The following table shows parameters with alarm limits that can be modified.

Parameter	Meaning	Range	Possible Cause of Alarm
Fans Status	Fan status	Normal to alarm	No problem.
Chassis Temperature	Fan tray temperature	-40.0°C to 65.0°C	Check ventilation.
Input PS1 Status	AC input for slot 1 power supply	OK	• Check power cord. • Make sure power supply is fully seated.
+24V Power Supply 1	Slot 1 power supply +24 V DC output voltage	23.8 V DC to 25.6 V DC	• Make sure power supply is fully seated. • Check voltage with digital multi-meter.
+5V Power Supply 1	Slot 1 power supply +5 V DC output voltage	4.9 V DC to 5.6 V DC	
-5V Power Supply 1	Slot 1 power supply -5 V DC output voltage	-5.6 V DC to -4.9 V DC	
Input PS3 Status	AC input for slot 3 power supply	OK	• Check power cord. • Make sure power supply is fully seated.
+24V Power Supply 3	Slot 3 power supply +24 V DC output voltage	23.8 V DC to 25.6 V DC	• Make sure power supply is fully seated. • Check voltage with digital multi-meter.
+5V Power Supply 3	Slot 3 power supply +5 V DC output voltage	4.9 V DC to 5.6 V DC	
-5V Power Supply 3	Slot 3 power supply -5 V DC output voltage	-5.6 V DC to -4.9 V DC	

Monitor Status Parameters Using LCI

Introduction

The LCI software allows you to verify the status of the power supply and fan tray.

Status Information

The following power supply and fan tray status information is available.

- Power supply installed/not installed
- +24 V power supply status
- +5 V power supply status
- -5 V power supply status
- Power supply Temperature
- Fan tray temperature
- Fans running/not running

Continued on next page

Monitoring Status Parameters

To monitor the parameters, navigate to the Module Details window of the fan tray (in the LCI module tree). The alarms are shown under the **Parameters** and **Status** headings.

The following table describes each status parameter.

Parameter	Units	Values
Power Supply 1 Installed	N/A	• **Yes** if slot 1 power supply is installed • **No** if power supply not installed
+24V Power Supply 1	V	Slot 1 power supply +24 V output voltage
+5V Power Supply 1	V	Slot 1 power supply +5 V output voltage
-5V Power Supply 1	V	Slot 1 power supply -5 V output voltage
Power Supply 1 Temperature	°C	Internal temperature of the slot 1 power supply
Power Supply 3 Installed	N/A	• **Yes** if slot 3 power supply is installed • **No** if power supply not installed
+24V Power Supply 3	V	Slot 3 power supply +24 V output voltage
+5V Power Supply 3	V	Slot 3 power supply +5 V output voltage
-5V Power Supply 3	V	Slot 3 power supply -5 V output voltage
Power Supply 3 Temperature	°C	Internal temperature of slot 3 power supply
Chassis Temperature	°C	Internal temperature of the fan tray.
Fans Running	N/A	• **Yes** if fans are running • **No** if fans are shut off

General Troubleshooting Information

Introduction

The following information:

- Lists the equipment you might need to troubleshoot the chassis
- Explains how to obtain troubleshooting assistance

Needed Equipment

You might need a digital multimeter (DMM) to troubleshoot the chassis.

Additional Assistance

For additional troubleshooting assistance, contact a Scientific-Atlanta assistance center in your area. Refer to Chapter 6, **Customer Information,** for a listing of assistance centers and their telephone numbers.

Troubleshooting Precautions

Before troubleshooting the chassis, take note of the following warnings.

WARNING:

- **Avoid electric shock and damage to this product! Do not open the enclosure of this product. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.**
- **Avoid damage to your eyes! Do not look into any optical connector while the system is active. Even if the unit is off, there may still be hazardous optical levels present.**

Troubleshoot Alarm Conditions

Introduction

The information in this section provides possible solutions to the following types of alarm conditions:

- General
- Power supply and fan tray

Troubleshooting General Alarms

The following table shows the possible causes of general alarm conditions and their possible solutions.

Alarm Condition	Possible Causes	Possible Solutions
POWER indicator is off.	Power supply connection is loose.	Verify that all power supply connections are secure.
	Loss of system power.	Verify that AC power is present at receptacle.
	AC power failure; backup in use.	Check other displays and indicators for power indication.
	Module indicator is burned out.	Contact Scientific-Atlanta for a replacement indicator. For instructions, refer to Chapter 6**, Customer Information.**
Alarm indicator is on.	Power supply problem.	Verify that all power supply connections are secure.
Cooling fans are not working.	Loss of power.	Check/reconnect power.
	Fan failure.	Replace fan tray.

Continued on next page

Troubleshooting Power Supply and Fan Tray Alarms

The following table shows the possible solutions to power supply and fan tray alarms.

Parameter	Meaning	Range	Possible Cause of Alarm
FansOk	Fan status	OK	No problem
ChasTemp	Fan tray temperature	-40.0°C to 65.0°C	Check ventilation
PS1_ACIn	AC input for slot 1 power supply	OK	• Check power cord. • Make sure power supply is fully seated.
PS1+24	Slot 1 power supply +24 V DC output voltage	23.8 V DC to 25.6 V DC	• Make sure power supply is fully seated. • Check voltage with digital multi-meter.
PS1+5VDC	Slot 1 power supply +5 V DC output voltage	4.9 V DC to 5.6 V DC	
PS1-5VDC	Slot 1 power supply -5 V DC output voltage	-5.6 V DC to -4.9 V DC	
Ps1Temp	Slot 1 power supply temperature	-40.0°C to 65.0°C	Check fan operation.
PS3_ACIn	AC input for slot 3 power supply	OK	• Check power cord. • Make sure power supply is fully seated.
PS3+24	Slot 3 power supply +24 V DC output voltage	23.8 V DC to 25.6 V DC	• Make sure power supply is fully seated. • Check voltage with digital multi-meter.
PS3+5VDC	Slot 3 power supply +5 V DC output voltage	4.9 V DC to 5.6 V DC	
PS3-5VDC	Slot 3 power supply -5 V DC output voltage	-5.6 V DC to -4.9 V DC	
Ps3Temp	Slot 3 power supply temperature	-40.0°C to 65.0°C	Check fan operation.

Chassis Maintenance Schedule

Introduction

Regular maintenance is required to extend the life of the chassis and to ensure optimal performance.

Required Maintenance

The following table describes the recommended maintenance.

Frequency	Maintenance Required
Daily	• Keep the transparent plastic front panel installed. • When not making chassis connections or adjustments, keep the panel closed to help protect the cables, modules, and ICIM.
Quarterly	• Make sure all cables are properly mated. • Inspect cables for stress and chafing. • Make sure all retaining screws are tight.
When needed	Carefully clean the chassis with a soft cloth that is dampened with mild detergent.

It may be helpful to establish a maintenance record or log for the chassis. Large variations in any parameters should be investigated prior to failure.

Chapter 6
Customer Information

Overview

Introduction

This chapter contains information on obtaining product support and returning damaged products to Scientific-Atlanta.

In This Chapter

This chapter contains the following topics.

Product Support

Obtaining Support

IF you have…	THEN…
general questions about this product	contact your distributor or sales agent for product information.
technical questions about this product	call SciCare™ Broadband Services, or other assistance center, and follow the menu options to speak with a service engineer.

Assistance Centers

Use the following table to find the assistance center in your area.

Region	Assistance Centers	Telephone and Fax Numbers
North America South America Central America	SciCare Broadband Services Atlanta, Georgia United States	• For *Technical Support*, call: Toll-free 1-800-722-2009 Local 770-236-5400 Fax 770-236-5748 • For *Customer Service* questions, call: Toll-free 1-800-722-2009 Local 770-236-6900 Fax 770-236-5477
Europe	England	Telephone 44-(0)-1923-271420 Fax 44-(0)-1923-269018
Asia-Pacific	Hong Kong, China	Telephone 852-2522-5059 Fax 852-2522-5624
Japan	Tokyo, Japan	Telephone 81-3-5322-2067 Fax 81-3-5322-1311

Returning Products

Introduction

Returning a product to Scientific-Atlanta for repair includes the following steps:

- Obtaining a return material authorization (RMA) number
- Packing and shipping the product

The following sections describe each of these procedures in detail.

Obtaining an RMA Number

You must have an RMA number to return products.

RMA numbers are valid for 60 days. If you already have a number, but it is older than 60 days, you must contact a Scientific-Atlanta SciCare Broadband Services representative to revalidate the number. You can return the product after the RMA number is revalidated.

Follow these steps to obtain an RMA number.

1. Contact a SciCare Broadband Services representative to request a new RMA number or revalidate an existing one.

   You can either call a representative or fill out and fax an RMA Request form.

IF you want to…	THEN…
fax in an RMA Request Form	proceed to step 2.
call to request an RMA number	proceed to step 4.

2. Fill out the RMA Request Form, and fax it to SciCare Broadband Services at 1-770-236-5477.

   Result: A customer service representative writes an RMA number on the form and faxes the form back to you.

3. Proceed to **Packing and Shipping the Product.**

Continued on next page

4. Telephone SciCare Broadband Services to request an RMA number.

   Are you located within the United States?

   - If **yes,** call 1-800-722-2009.
   - If **no,** call:
     - The United States: 1-770-236-5300

       or
     - The United Kingdom: +44-1-923-271460

5. Provide the following information to the customer service representative:

   - Product model number and/or part number
   - Number of products to return
   - Symptom(s) you are experiencing with the product
   - Your company name, contact, telephone number, fax number, and repair disposition authority
   - Any service contract details
   - Purchase order number, if available

   Result: The representative issues the RMA number.

   Notes: If you cannot provide a purchase order number:

   - A proforma invoice listing all costs incurred will be sent to you at the completion of product repair.
   - SciCare must receive a purchase order number within 15 days after you receive the proforma invoice.
   - Products can accrue costs through intentional damage or misuse, or if no problem is found. If your company requires a purchase order number to make payment for repairs, products incurring costs will not be dispatched to you without a valid purchase order number.

6. Proceed to **Packing and Shipping the Product.**

Continued on next page

Packing and Shipping the Product

Follow these steps to pack the product and ship it to Scientific-Atlanta.

1. Are the product's original container and packing material available?
   - If **yes,** pack the product in the container using the packing material.
   - If **no,** pack the product in a sturdy, corrugated box, and cushion it with packing material.

   Important: You are responsible for delivering the returned product to Scientific-Atlanta safely and undamaged. Shipments damaged due to improper packaging may be refused and returned to you at your expense.

2. Write the following information on the outside of the container:
   - Your name
   - Complete address
   - Telephone number
   - RMA number

   Note: Absence of the RMA number may delay processing of your product for repair. Make sure to include the number in all correspondence to Scientific-Atlanta.

3. Are you shipping the product from a location within the United States?
   - If **yes,** proceed to step 4.
   - If **no,** do the following:
     - Consign international shipments to Scientific-Atlanta, Inc., with the notified party on the Airway Bill stated as "Expediters International for Customs Clearance".
     - Proceed to step 4.

4. Ship the product prepaid and insured to the following address.

   Scientific-Atlanta, Inc.
   RMA Number ____________
   Factory Services
   4245 International Boulevard
   Norcross, GA 30093
   USA

   Important: Be sure to prepay all shipments, as Scientific-Atlanta does not accept freight collect.

Want **MORE**?	**www.scientificatlanta.com**
Now **TALK** to someone	**United States** Scientific Atlanta, Inc., 5030 Sugarloaf Parkway, Box 465447, Lawrenceville, GA 30042; Tel: 770.903.5000 **Europe** Scientific Atlanta Europe GmbH, Westerbachstrasse 28, 61476 Kronberg, Germany; Tel: 49.6173.928.000 **Asia-Pacific** Scientific Atlanta (Singapore) Pte. Ltd., 1 Claymore Drive, #08-11 Orchard Towers, Singapore 229594; Tel: 65.733.4314 **Latin America** Scientific Atlanta Argentina S.A., Carlos Pelligrini 1149, Piso 11°, Capital Federal C1009ABW, Buenos Aires, Argentina; Tel: 54.11.4325.2800
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